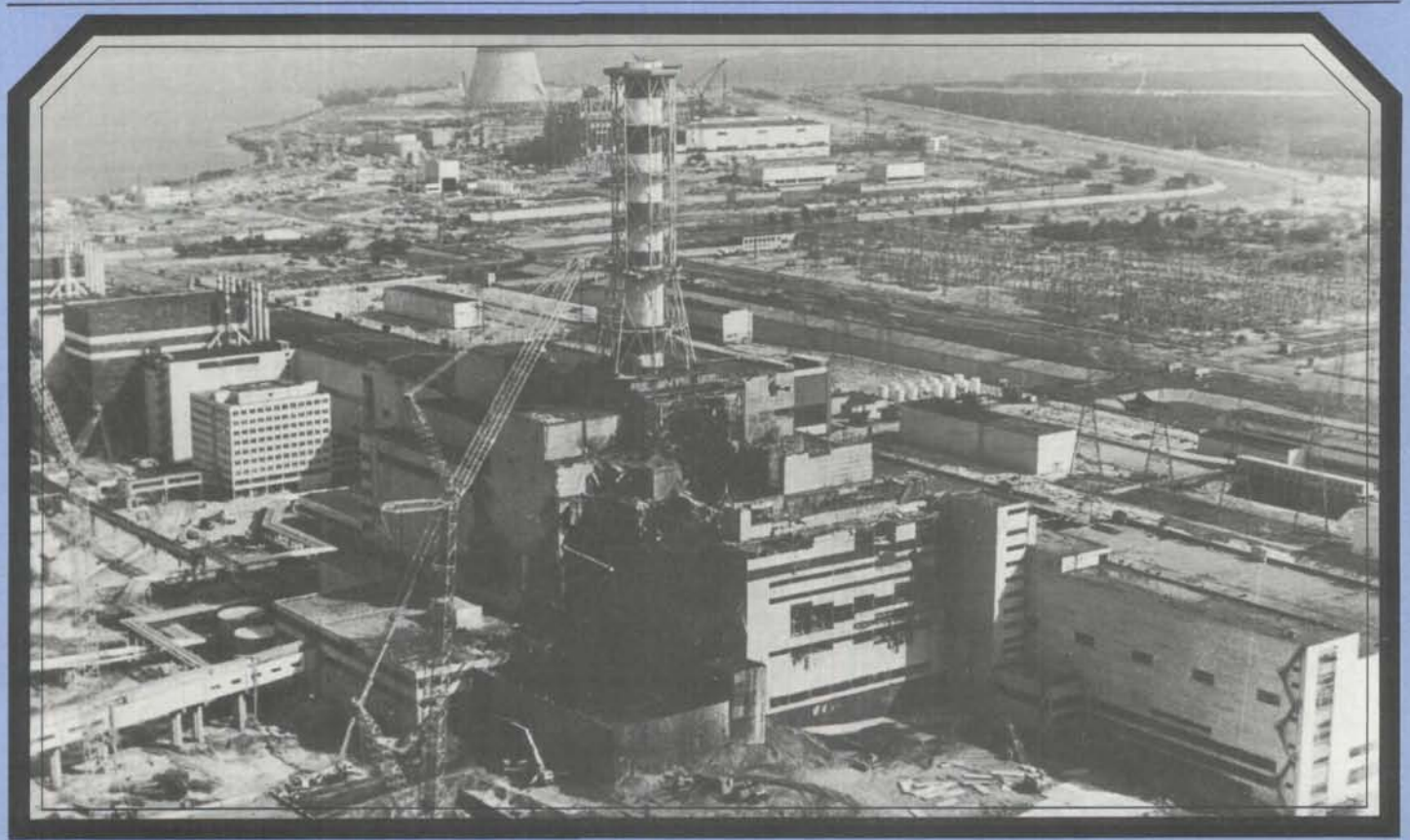
Problems of Communism

Book Reviews

Robert S. Ross
Allan E. Goodman

NOVEMBER-DECEMBER 1986



CHERNOBYL' CONSEQUENCES

Judith Thornton David R. Marples Ellen Jones & Benjamin L. Woodbury, II John M. Kramer

China's Opening to the World

Huan Guocang

Note

Special Economic Zones of the PRC

Joseph Fewsmith

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Problems of Communism

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NOVEMBER-DECEMBER 1986 VOL XXXV

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COVER: The Chernobyl' Nuclear Power Station; in the foreground construction proceeds on the entombment of destroyed reactor unit No. 4. Photo from TASS via Sovfoto.

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IN THIS ISSUE OF

Problems of Communism

Articles

THE CONSEQUENCES OF CHERNOBYL'

Chernobyl' and Soviet Energy

Judith Thornton

Although the Soviet economy seems to have weathered the short-run consequences of the April 1986 disaster at the Chernobyl' Nuclear Power Station, the accident casts a long shadow over the Soviet power sector in the intermediate term. Graphite-moderated reactors of the sort that exploded at Chernobyl' figure strongly in the highly ambitious Soviet plans to expand the output of nuclear power in the medium term. Extensive refitting of such reactors to improve safety, or abandonment of the reactor design, could jeopardize output targets of the energy sector and of the whole Soviet economy.

Chernobyl' and Ukraine

David R. Marples

The Soviet population in the area around Chernobyl' bore the brunt of the accident and the subsequent clean-up efforts. Over 200,000 people were exposed to dangerous levels of radiation and over 135,000 were displaced through evacuation. Workers engaged in the difficult task of entombing the exploded reactor and decontaminating the affected 30-square-kilometer area have had to cope with very poor sanitary and living conditions.

Chernobyl' and *Glasnost'*

Ellen Jones and Benjamin L. Woodbury, II

Since coming to power, General Secretary Mikhail Gorbachëv has attempted to make "openness" *(glasnost')* a hallmark of his regime. Yet, when the accident at Chernobyl' occurred, the Soviets initially repressed news about it. When this reticence proved counter-productive both at home and abroad, the Soviets launched a relatively informative—and quite effective—public relations campaign. The success of *glasnost'* in containing the negative repercussions created by Chernobyl' apparently strengthened the position of those Soviet leaders who believe that qualified openness molds foreign and domestic public opinion more effectively than secrecy.

Chernobyl' and Eastern Europe

John M. Kramer

The recent accident at Chernobyl' only adds to the long list of problems East European governments face in implementing their nuclear power plans that foresee 40,000 megawatts of new nuclear capacity in the region by the end of the century. Although Chernobyl' has fostered reservations about nuclear power among political elites and populations of the region, there are no readily available alternative sources of power. Thus, nuclear power is likely to remain an important, though not decisive, component of the energy balance in Eastern Europe.

(Abstracts continued on reverse side)

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China's Opening to the World

Huan Guocang

By "opening" China "to the outside world" in 1979, Chinese leaders hoped to expand foreign trade, introduce foreign technology into Chinese industry, and gradually integrate the Chinese economy into the world economy. By the last quarter of 1985, however, the experiment was floundering. The rapid increase in imports of both production and consumer goods produced a large trade deficit, and the nation's foreign exchange reserves dropped drastically. Alarmed by such reverses, and stung by criticisms from party conservatives, China's reformers took measures to tighten government control over the conduct of foreign trade, especially import volume and foreign exchange expenditures.

Note

Special Economic Zones in the PRC

Joseph Fewsmith

The Special Economic Zones have been a pivotal and controversial feature of China's opening to the world. Conceived as a window through which foreign capital, technology, and know-how could be introduced in order to spur the PRC's modernization, they were attacked by conservative forces as throw-backs to the treaty concessions of the 19th and early 20th centuries and as a source of corruption and the squandering of scarce foreign exchange. The SEZ's appear to have weathered the storm of criticism and to be progressing on a somewhat more modest and controlled course of development.

Essay Reviews

Indochina's Continuing Tragedy

Robert S. Ross

Vietnamese-Cambodian hostilities and the Sino-Vietnamese War now appear to have been the inevitable next stage of the Indochina conflict after the US withdrawal from Vietnam. Recent studies reveal that the tragedy in these events lies in the fact that the two major protagonists, Vietnam and China, initially preferred to avoid war. Armed conflict erupted mainly because Phnom Penh could not be persuaded to pursue peaceful solutions, and because the United States and the Soviet Union favored options promoting Sino-Vietnamese hostilities.

Vietnam War Reviewed

Allan E. Goodman

Access to new materials, opportunities to interview North Vietnamese officials, and the advantages (as well as disadvantages) of hindsight have brought some new perspective to the handful of scholars who continue to dominate the study of Vietnam, and have helped to correct some prevalent misimpressions about the war. Although some earlier reportorial works are more successful in conveying the analytical fog, media hype, and misconceptions that affected both the conduct of the war and the expectations about its outcome in Washington, Saigon, and Hanoi, some of the new scholarship will be useful to those seeking to understand today's limited wars and revolutionary struggles.

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The Consequences of Chernobyl'

EDITORS' NOTE: The April 1986 explosion at the Chernobyl' Nuclear Power Station in Soviet Ukraine captured world headlines and engaged the concern of individuals, governments, and international organizations. Much was written about the accident in its immediate aftermath, and analysis of it and its consequences continues. The four articles that follow discuss implications of Chernobyl' for the Soviet economy in general, for the future of nuclear power in the USSR and Eastern Europe, for regional politics, and for Mikhail Gorbachëv's policy of *glasnost'*.

Chernobyl' and Soviet Energy

Judith Thornton

On April 26, 1986, unit No. 4 at the Chernobyl' Nuclear Power Plant in Soviet Ukraine exploded, raining radioactive particles on adjacent units, on nearby towns and farmlands, and—in lesser, but measurable amounts—on places as far afield as Poland and Sweden. The disaster also had short- and longer-term fallout for the economy of the Soviet Union, since the success of its 12th Five-Year Plan (for 1986–90) was predicated to a large measure on an extraordinary increase in nuclear power generation.

The USSR has needed to pursue its nuclear option because of a continuing inability of its economy to increase the efficiency of energy use. In 1981–85, total energy use per unit of national income remained unchanged, and the use of electricity actually increased.[1] The tightness of the energy sector in that period was evidenced by the practice of load shedding at peak hours, even in the summer months. To meet the unabating demands for power, and simultaneously to reduce domestic consumption of fossil fuels, particularly oil,[2] Soviet planners have targeted an increase of nuclear power from 28,358 megawatts (Mw) in 1985 to 69,300 Mw in 1990. Output of the nuclear sector has been slated to grow from 167 billion kilowatt hours (kwh) to 390 billion kwh in the same period. If achieved—an outcome that was most unlikely even before the Chernobyl' accident—this would increase the share of nuclear power in total electric power from 10.8 percent to 21.2 percent (see Table 1).

It is in this economic context that the Chernobyl' disaster unfolded. This article will describe the power plant and the April accident, explore the factors contributing to the tragedy, assess its economic consequences, and weigh the options facing Soviet energy planners.

Judith Thornton, Professor of Economics at the University of Washington (Seattle), has written widely on Soviet economics and energy. Some of the research on which this paper is based was completed while the author was a fellow at the Kennan Institute for Advanced Russian Studies, The Wilson Center (Washington, DC).

[1] In 1985, for example, energy use was still 3.55 tons of standard fuel per 1,000 rubles of national income (compared with 3.57 tons in 1980), and electricity consumption was 3 kwh per ruble of national income (compared with 2.92 kwh per ruble in 1980). See P. S. Neporozhnyy, Ed., *Tekhnicheskiy progress energetiki SSSR* (Technological Progress in USSR Power), Moscow, Energoatomizdat, 1986, p. 13.

[2] As revenues from oil sales came to provide three-quarters of Soviet hard-currency income in the early 1980's, domestic consumption of oil as a boiler fuel for power plants has come to seem less and less cost-effective. At the same time, the deteriorating quality of available coal supplies has begun to call into question the expansion of coal-fired thermal electric plants, at least in the European part of the USSR. Using the average heat rate (rate of fuel consumption) in a condensing power station for comparison, a nuclear plant the size of that at Chernobyl', which produced an average of 28 billion kwh of power a year, could save about 9.9 million tons of standard fuel a year.

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Table 1: Structure of Soviet Electric Power Output, 1965-1990

Year	All, bil. kwh	Percent	Hydro-electric, bil. kwh	Percent	Nuclear, bil. kwh	Percent	Non-nuclear thermal, bil. kwh	Percent
1965	506.672	100	81.434	16.1	1.400	0.3	425.238	83.9
1970	740.926	100	124.377	16.8	3.696	0.5	612.853	82.7
1975	1,038.607	100	125.987	12.1	20.205	1.9	892.415	85.9
1980	1,293.878	100	183.889	14.2	72.900	5.6	1,037.100	80.2
1985	1,544.000	100	215.000	13.9	167.000	10.8	1,162.000	75.3
1990 (planned)	1,840.000	100	245.000	13.3	390.000	21.2	1,205.000	65.5

SOURCES: Summary output statistics are from *Narodnoye khozyaystvo SSSR* (The National Economy of the USSR), Moscow, Finansy i Statistika. For various years, see *Elektroenergetika i energeticheskoye stroitel'stvo SSSR* (Electric Power and Power Construction of the USSR), Moscow, Informenergo, 1977, pp. 42–44, and 1980, pp. 42–44. Output by type of capacity is from *Elektroenergetika . . .*, 1977, pp. 45–49, and 1980, pp. 45–49; A. M. Nekrasov and M. G. Pervukhin, Eds., *Energetika SSSR v 1976–1980 godakh* (Power of the USSR in 1976–1980), Moscow, Energoizdat, 1977, pp. 11, 61; A. M. Nekrasov and A. A. Troitskiy, *Energetika SSSR v 1981-1985 godakh* (Power in the USSR in 1981-1985), Moscow, Energoizdat, 1981, pp. 11,13, 29, 129; and Robert W. Campbell, *Basic Data on Soviet Energy Branches*, Santa Monica, CA, Rand, December 1979. (Soviet data for 1965 and 1980 were internally inconsistent.)

The Chernobyl' Plant

Located on the Prypyat' River 150 kilometers north of Kiev in the eastern part of a region known as the Belorussian-Ukrainian Woodlands, the Chernobyl' plant is one of the largest in the Soviet Union. Originally planned for a capacity of 6,000 Mw, the plant had at the time of the accident four 1,000-Mw units installed and operating and an additional two units under construction. The four operational units, completed in 1977, 1978, 1981, and 1983, are housed in a single large structure adjacent to a machine room housing turbines and generators, and close to other equipment buildings on the site. The two reactors under construction are located 1.5 kilometers to the southeast, and further to the southeast is a 22-square-kilometer pond built to provide cooling water for the heat exchangers of the four reactors.

The town of Prypyat', three kilometers to the west, grew as the plant grew. Among its 49,000 inhabitants were more than 4,000 engineers and technicians operating the plant and manning its fuel cycle, and a share of the 2,250-odd construction workers installing reactor units 5 and 6.

The RBMK-1000 reactors installed at Chernobyl' are graphite-moderated, boiling-water-cooled units produced by the Izhora factory near Leningrad. The initials stand for "reactor, large capacity, channel type," because the nuclear fuel rods are in almost 1,700 individual channels encased in a stack of graphite blocks. Bundles of 18 zirconium-clad rods containing uranium oxide fuel are lowered into each channel from above. Cooling water is pumped from below into each tube between the fuel rods and the outer wall of the tube. Steam produced in the reactor is piped to steam separators and, from there, to two 500-Mw turbogenerator units. Control of the reactor is based on movement of 211 solid absorber rods in specially separated channels in the graphite. In addition, reactor units 3 and 4 (the latter, the one that exploded) are fitted with a large number of other monitoring and control systems intended to assure safety in operation and to shut the reactor down in emergencies.[3] There is a stout metal housing around the core and a reactor building with metal-reinforced concrete walls 700 millimeters (about 2 feet) thick. The core is covered by an inert nitrogen gas, and a pressure-suppression pool lies below the reactor.

The RBMK reactor has distinct advantages and disadvantages. Its modular design allows it to be mass-produced and assembled on site, and the absence of a pressure vessel means that it can be expanded simply by increasing the flow of coolant through the core or by adding more fuel elements and control rods. Fuel elements can be replaced without shutting down the reactor.[4] It uses slightly enriched uranium, can operate with wide variations in power levels, and is capable of producing approximately 2.6 kilograms of plutonium–239, 1.8 kilograms of plutonium–240, and 0.5 kilograms of plutonium–241 per ton of uranium.[5]

On the debit side, the design has a very complex water circulation system; the graphite core operates at

[3]See USSR State Committee for Utilization of Atomic Energy, *The Accident at the Chernobyl' Nuclear Power Plant and Its Consequences*, Information Compiled for the IAEA Experts' Meeting, 25–29 August 1986, Vienna, Part 1, General Material, pp. 6–7. This source will be cited hereafter as *Information Report*.

[4]N. A. Dollezhal' and Yu. I. Koryakin, "Nuclear Power in the USSR," in D. G. Zhimerin et al., Eds., *Sovremennyye problemy energetiki* (Current Problems in the Power Industry), Moscow, Energoatomizdat, 1984, pp. 157–59.

[5]*Information Report*, p. 7.

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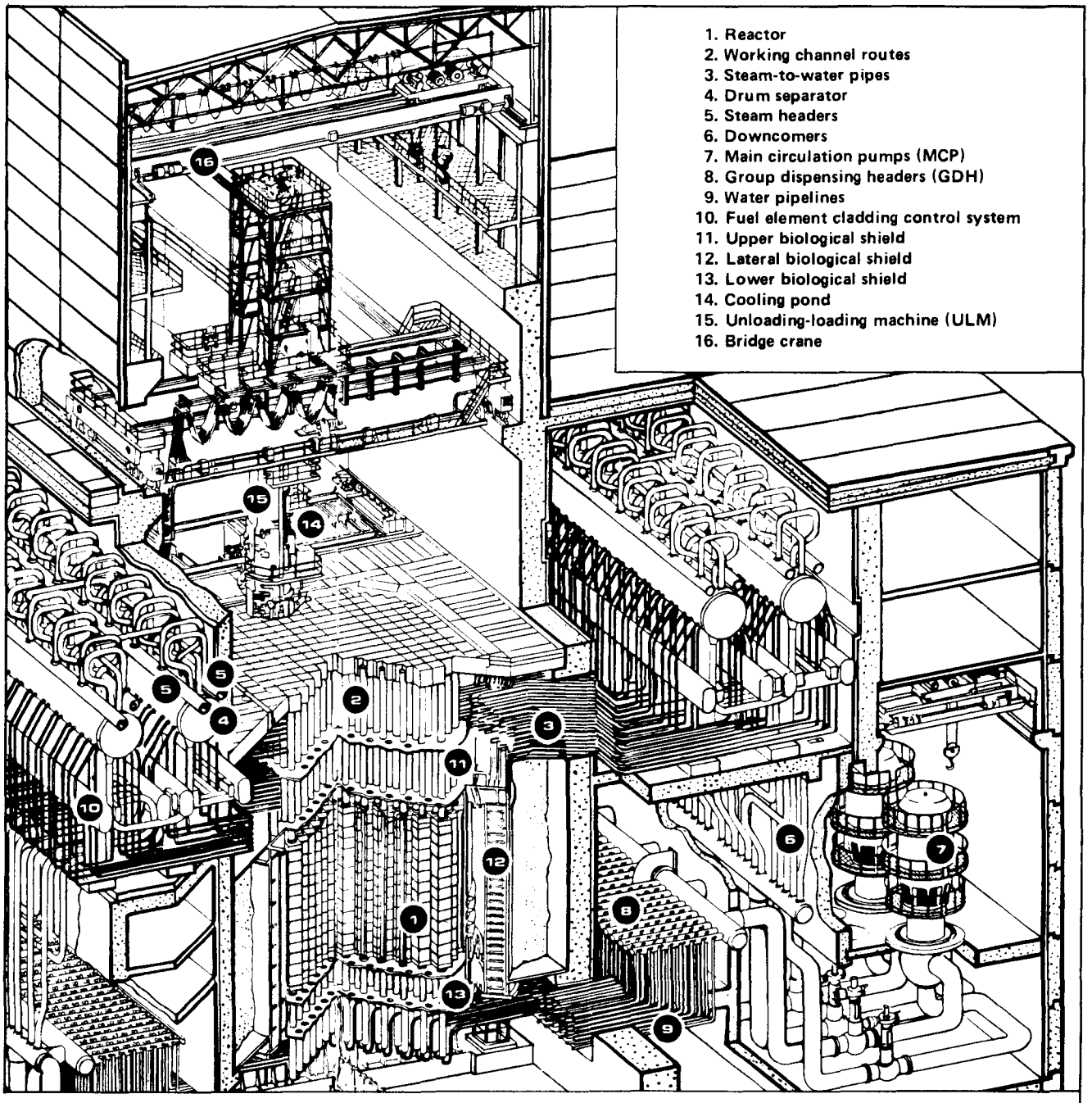

A sectional view of the RBMK-1000 reactor.

—*IAEA Bulletin* (Vienna), Vol. 25, No. 2, June 1983, p. 51.

a very high temperature; and, perhaps most important, there is a tendency for the fission reaction to increase, generating a power surge, should cooling water be lost or excessive boiling occur. (In most Western commercial reactors, loss of coolant has the opposite effect of reducing power output.)

[6]Ibid., pp. 15–25.

Disaster Strikes

The following picture of the nuclear accident at Chernobyl' and its immediate aftermath is drawn from the official report of the USSR State Committee on the Utilization of Atomic Energy that was presented at a meeting of experts at the International Atomic Energy Agency on August 25–29, 1986,[6] and from press

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accounts. According to the report, all four units of the Chernobyl' nuclear plant were in operation on April 25, when unit No. 4 was to be shut down for routine maintenance. At this point, the plant management decided to conduct an experiment that involved disconnecting the generators from the grid to see how long mechanical inertia would allow them to power the unit's auxiliary equipment if a power failure and steam cut-off were to occur. Similar tests had, according to the report, been conducted in the past.

The test procedures were inherently risky because they called for a shut-down of the reactor's emergency core cooling system for the duration of the test. The events that followed made the situation still more dangerous. During the time the reactor's emergency cooling system was cut off, the plant personnel interrupted the test to respond to a request for delivery of power by the power supply authority, and the reactor was operated for almost 10 hours without its emergency cooling system.

The test was resumed at 1:00 a.m. on April 26, when the operators began, once again, to reduce power in the reactor. From this point on, the report notes, the reactor was operating unstably, and the operators were continually introducing new perturbations into the control system in unsuccessful attempts to stabilize it. Part of the problem was that one automatic control system was disengaged by mistake. Another problem was a buildup of xenon in the reactor. Xenon, a by-product of the decay of iodine–131, slows down the nuclear chain reaction, causing the power output to drop. To compensate for this, the operators withdrew many of the control rods,[7] impairing the ability to dampen promptly any power surge or to shut down the reactor immediately.

Under normal conditions, the Chernobyl' reactor had safety systems to guard against power bursts, but conditions were far from normal as the experiment continued. Two more pumps were connected to the reactor shortly after 1:00 a.m. to provide steam for the experiment. However, this resulted in too much cooling water flowing through the core. To prevent the reactor from shutting down automatically, as it is designed to do in such circumstances, the operators blocked signals from pressure and water-level sensors, disabling still another part of the emergency safety system. The decrease in steam generation caused by the excess cooling water prompted the operators to continue withdrawing the automatic control rods, until virtually all of them had been removed. This further reduced the operators' ability to respond to an emergency.

About a minute before the generator turn-off was to be tested, the operator reduced the flow of feedwater to the plant. Then, because some of the pumps were powered by the generator being shut down, the amount of cooling water to the reactor was reduced still more, triggering the fatal power surge. Within three seconds, the power level in the reactor shot up from 7 to more that 50 percent of capacity. The operator pressed an emergency button to drop the control rods into the reactor, but noted a number of physical jolts and saw that the absorber rods had stopped before reaching bottom.

By now, the situation was out of control. The formation of steam and overheating of the fuel led to a thermal explosion that breached the building. Then, there appears to have been a hydrogen explosion that propelled radioactive fragments high into the air and started more than 30 fires around the reactor site. One of these was on the roof of a turbine room adjoining the No. 3 reactor, which was still operating. The heat also started a fire in the graphite of the core of No. 4.

Judging from the initial response, no contingency plans existed to deal with a nuclear catastrophe. It was a fire, so they called the fire department, which took 90 minutes to get there! Thus, the brunt of the initial response to the reactor fire was borne by local and oblast conventional firefighting units administratively under the Ministry of Internal Affairs (MVD). As one account put it:

We should note that the message alerting the Directorate of Internal Affairs duty unit indicated only that there was a fire at the nuclear power plant. Only a fire! Not until later was it known that damage had occurred to the reactor core . . . . But a nuclear power plant is a nuclear power plant, and within minutes—as prescribed by the emergency situation coordination plan in effect—crews from the Firefighting Directorate of the Kiev City Executive Committee Directorate of Internal Affairs were en route to Chernobyl'. Fire trucks from Ivankov and Polis'ke were already on their way . . . . Within a few hours an operations headquarters had been set up at the accident site, headed by Colonel V. M. Buvsunovskiy, Deputy Chief of the Kiev Oblast Executive Committee Directorate of Internal Affairs.[8]

Apparently, higher officials were notified shortly after the accident. Major General Gennadiy Berdov, deputy internal affairs minister of the Ukrainian SSR, arrived at the Chernobyl' plant early on the morning of April 26.[9]

[7]Colin Norman, "Chernobyl: Errors and Design Flaws," *Science* (Washington, DC), Sept. 5, 1986, pp. 1029–31.
[8]*Literaturna Ukraina* (Kiev), May 22, 1986.
[9]*Sovetskaya Rossiya* (Moscow), May 9, 1986.

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A working group from the Atomic Energy Institute in Moscow, headed by Deputy Director Valeriy Legasov, arrived later in the day, and they were followed later by members of a Soviet government commission that had been constituted under the leadership of Nikolay Ryzhkov, Chairman of the USSR Council of Ministers, to investigate the accident.[10] This commission was assigned to oversee damage control and evacuation activities. Headquartered in Chernobyl', it was originally headed by Boris Shcherbina, Deputy Chairman of the USSR Council of Ministers. On-site direction of the commission was subsequently rotated to several other of its members—I. S. Silayev, Y. P. Batalin, L. A. Voronin, V. K. Gusev, and G. G. Vedernikov—possibly out of concern for the health of the officials involved.

According to the Soviet official report, units 1 and 2 at the Chernobyl' plant were, surprisingly, kept in operation throughout the fire and the first day of the crisis. This occurred in spite of the fact that there was significant radioactive contamination of the equipment and buildings from radioactive materials coming through the ventilation system and through the damaged roof of the third unit (which had been shut down at 5:00 a.m. on the 26th).

On Sunday, April 27, military helicopters began to drop boron, dolomite, sand, clay, and lead on the damaged reactor to absorb air-borne radioactivity. At the same time, nitrogen was pumped from the compressor station under the reactor to lower the temperature of the fuel. Komsomol members were mobilized to assist, as a *Komsomol'skaya Pravda* account of May 11 reveals in laudatory tones:

A joyless dawn broke, and with it came very difficult problems. The party gorkom [city committee] had issued a request: Komsomol members must go and cover the reactor. Sand will be needed. Find volunteers. . . . It would take a lot of sand. Great mountains of sand. A boundless sea of sand. No one needed persuading. Well, hardly anyone. They called on Komsomol members at home and at work. As in wartime, many had grabbed their Komsomol cards and turned up at the raykom [district committee] of their own accord. Send us, they said, we are ready. Quickly targets were set. Twenty tons of sand were loaded into sacks, then another 40 tons. Impossible goals were set only to be overfulfilled immediately.

As the world gradually came to find out, the accident had released large amounts of radioactive materials into the air. Much of the radioactivity fell on the plant site, on the nearby town of Prypyat', and on the surrounding countryside. However, the Chernobyl' fallout was also blown westward, and traces were soon detected in parts of Eastern and Western Europe. The Soviet report on the accident estimates that about 50 million curies of fission products (or some 30 to 40 times the radioactive emissions from the atomic bombs dropped over Hiroshima and Nagasaki in 1945) were released into the atmosphere between April 26 and May 6. Researchers at the United States Department of Energy's Lawrence Livermore National Laboratory estimate that most of a core inventory of 80 million curies of iodine–131 and 6 million curies of cesium–137 were released by the Chernobyl' explosion (compared to a release of a mere 15 curies of iodine–131 released in the Three Mile Island accident in 1979 in the United States).[11]

The radiation reached potentially lethal levels in the area around the plant, with personnel at the site receiving approximately 400 rem almost immediately after the accident. The largest release of radioactivity occurred during the initial explosion. Then radioactive emissions gradually declined over the next five days. However, radioactive emissions rose again sharply on

Some of the firemen who were the first to fight the blaze at unit No. 4 of the Chernobyl' Nuclear Power Station undergo dietary and physical therapy at a branch of the Central Hospital of the USSR Ministry of the Interior in July 1986.

—TASS from Sovfoto.

[10]From a May 14 address by M.S. Gorbachëv, quoted in *Pravda* (Moscow), May 15, 1986.

[11]Warren Donnelly, Carl Behrens, and Mark Martel, "The Chernobyl' Nuclear Accident: Causes, Initital Effects, and Congressional Response," *Issue Brief* (Washington, DC), Aug. 19, 1986, p. 3.

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May 2 as decay heat in the remaining fuel drove the temperature up. Almost half of the release of emissions occurred between May 2 and May 5, before dropping again on May 6.

Two people were killed at the time of the explosion. By October, the death toll—which included many firefighters—was 31, and another 300 had been hospitalized. Most of the 49,000 people in Prypyat' were exposed to radioactive emission for about 36 hours before evacuation, which began at 2:00 p.m. on Sunday, April 27. Originally, people were moved out of the Ukrainian part of a 10-kilometer zone around the plant, children being taken directly to summer camps, and adults being evacuated to rural areas in Kiev Oblast, mainly to Polis'ke district. Evacuation of a wider, 30-kilometer-radius zone, including the town of Chernobyl' and parts of Belorussia, occurred after Nikolay Ryzhkov and Yegor Ligachëv arrived in Chernobyl' on May 3 with Volodymyr Shcherbytskyi, secretary of the Ukrainian Communist Party. In all, some 135,000 persons were evacuated as a result of the disaster.

The later evacuation involved moving collective farmers, together with their livestock, by truck to other collective farms in Kiev Oblast. The evacuation put a tremendous burden on the surrounding area, with evacuees camped in public buildings and families doubled up in rural homes. In addition to providing for those evacuated, the region had to accommodate health, administrative, and military personnel who had been rushed in to contain the accident and rehabilitate the affected area.

Contributing Factors

The Soviet official report placed primary responsibility for the disaster on operator error and spoke of plans for "organizational steps to reinforce technological discipline and to improve the quality of operations." Indeed, reviewing the number of human errors contributing to the explosions (see Table 2), one could understand why one Western observer at the August IAEA meeting in Vienna likened the sequence of events to a "Marx Brothers comedy."[12] However, as we shall see, the human factor was not the only one contributing to the disaster.

Considering the rapid growth of the Soviet nuclear power sector, it would not be that surprising to find that the majority of operators and engineers were relatively inexperienced or that the Ministry of Energy and Electrification (Minenergo) was having difficulty meeting its needs for trained personnel. The ministry (subsequently split) had a large and growing force of skilled labor. Between 1980 and 1983, the number of energy specialists with higher and technical high school educations increased from 536,000 to 600,000. In 1980 alone, 44,691 technical personnel and 17,719 engineers and power specialists graduated from technical high schools and higher educational institutions in the energy field. Another 36,739 technical personnel graduated from technical high schools with training in electrical machine-building and related skills.[13]

Data on training specifically geared for work in nuclear power are less comprehensive. While it was reported that the number of engineers being prepared for construction of nuclear plants tripled in 1981, and increased another 80 percent in 1985, no base figure is provided. About half of the country's nuclear engineers study at the Obninsk affiliate of the Moscow Engineering Physics Institute, which since 1982 has offered a special training program for more than 100 trainees preparing to manage nuclear power plants. This program provides a two- to four-month internship at a nuclear power station. In addition, the nuclear power industry has active in-service training programs for its personnel.[14]

In the aftermath of Chernobyl', retraining of staff and recruitment of skilled and responsible personnel must be a matter of urgent concern. But this is only part of the solution. The RBMK reactor is poorly designed and difficult to operate, even for skilled personnel. As Lord Walter Marshall, Chairman of the British Central Electricity Generating Board, put it: "You can make any design safe by having clever enough operators, but the designers of Chernobyl' gave the operators too difficult a task."[15]

There is some indication that decision-makers in the nuclear power industry are aware of the difficulties facing Soviet nuclear plant managers. Sources discussing the training of nuclear plant personnel refer to a special program of psychological testing designed to identify individuals who are well suited to employment in the nuclear industry.[16] The fact that Soviet nuclear plants are less automated than Western plants involves workers more directly in plant operations and maintenance, which increases workers' risk of exposure to radiation and doubtless contributes to higher levels of stress.

[12]"Moscow Now Sees Chernobyl's Peril Lasting For Years," *The New York Times*, Aug. 22, 1986.

[13]*Vestnik Statistiki* (Moscow), No. 7, 1981, pp. 69–79.

[14]Neporozhnyy, op. cit., pp. 214–15.

[15]Quoted in Stuart Diamond, "Design Flaws, Known to Moscow, Called Major Factor at Chernobyl," *The New York Times*, Aug. 26, 1986.

[16]Neporozhnyy, op. cit., p. 215.

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Table 2: Operator Errors in the Chernobyl' Disaster

Violations of the Rules	Motivation	Consequences
1. Withdrew control rods available to shut down reactor.	To prevent the reactor from shutting down at low power.	Lost ability to shut down reactor quickly.
2. Disengaged power regulator.	To prevent shutdown while operating at below normal power.	Loss of reactor control.
3. Ran all circulating pumps above maximum flow rates.	To produce steam for test.	Loss of cooling capacity.
4. Blocked automatic reactor shutdown.	To repeat experiment.	Loss of automatic emergency shutdown.
5. Blocked system to protect against low water level.	To conduct test in spite of unstable condition of reactor.	Loss of automatic overheating shutdown.
6. Switched off emergency core cooling system.	To prevent spurious triggering of emergency system during test.	Inability to reduce effects of overheating.

SOURCE: USSR State Committee on the Utilization of Atomic Energy, *The Accident at the Chernobyl' Nuclear Power Plant and Its Consequences*, Information Compiled for the IAEA Experts' Meeting, 25–29 August, 1986, Vienna, Part 1, General Material, pp. 22-23.

The Soviet official report also hints at possible problems in quality control—e.g., the failure of the control and absorber rods to insert themselves fully into the core when the emergency button was pressed. Besides calling for improved training, the report's section entitled "Recommendations for Improving Nuclear Power Safety" noted that "the design and construction staff must verify more carefully the quality of plant components during manufacture, assembly, and adjustment during commissioning . . . ."[17]

However careful the design of a reactor may be, its safety in operation depends on how well the design is, in fact, implemented. An article on the construction of the Chernobyl' plant in *Energeticheskoye Stroitel'stvo* permits the inference that problems in the construction stage may have contributed to the nuclear accident.[18] The article refers to the rapid pace of construction of the "second set" of Chernobyl' reactors—that is, units 3 and 4—and the substantial savings in materials and labor costs that were achieved by substituting prefabricated for poured-in-place concrete panels and by using contract brigades for a substantial portion of the construction work.

The same article goes on to detail the rapid pace at which unit 4 was completed, in order to achieve start-up within the planned deadline. A later account of failures of supply, delivery of defective materials, and deductions for "spoilage" and "shoddy structures" associated with the ongoing construction of unit 5 at the Chernobyl' plant tends to reinforce suspicions regarding construction of the earlier units.[19]

Cost-conscious design decisions (aimed at justifying the use of particular nuclear power technologies) tend to lower safety engineering and also put enormous pressures on those assigned to carry out the construction of nuclear power plants in the Soviet Union. As one Soviet commentator observed in a recent article, designers are interested in low capital and material costs, but have no incentives to reduce labor costs of construction.[20]

When considering future investments, designers base cost comparisons on calculations of projected (*privedënnyye zatraty*) or full costs of power (measured as current costs plus a percentage charge on fixed capital). Since these calculations assign an interest charge to the estimate cost of the new power plant, design changes raising such costs reduce the attractiveness of the technology in question. This discourages the inclusion of design features that do anything more than assure minimum safety standards, particularly if the safety features do not at the same time render the equipment more cost-effective. Builders, on the other hand, would prefer that the design be high-budget, making it easier to meet design specifications without cost overruns and—incidentally—helping them to fulfill targets for gross value of construction completed.

[17] *Information Report*, p. 42.

[18] V. M. Chernyshenko, "Basic Results of the Construction of the Chernobyl' Nuclear Power Plant," *Energeticheskoye Stroitel'stvo* (Moscow), November 1984, pp. 2–6.

[19] See *Literaturna Ukraina*, Mar. 27, 1986.

[20] G. A. Denisov, "Problems in the Nuclear Power Station Economic Investment Process," *Energeticheskoye Stroitel'stvo*, February 1986, pp. 13–19, trans. in Joint Publications Research Service, *USSR Report: Energy* (Washington, DC), June 5, 1986. One discussion suggested that nuclear plant construction costs are underestimated by 20–42 percent, compared to underestimates of only 13–29 percent for thermal power plants. See S. Ya. Chernavskiy, "The Promising Role of Nuclear Power in a Fossil Fuel Economy," *Atomnaya Energiya* (Moscow), November 1984, pp. 328–36.

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Table 3: Comparison of Costs of Electric Power

(in millions of rubles)

	Estimate cost of investment	1976-80 cost of investment	+20 percent investment	At standard fuel cost of 45 r/kwh	At nuclear plant cost +40 percent
COSTS OF 2,000-Mw NUCLEAR PLANT					
Capital investment	360.0	1,037.4			
Working capital	60.0	60.0			
Total fixed and working capital (Kt)	420.0	1,097.4	1,316.9	1,316.9	1,536.4
Capital cost w/interest of 8 percent	484.4	1,265.3	1,518.4	1,518.4	1,771.4
Annual capital charge at 12 percent	58.1	151.8	182.2	182.2	212.6
Annual operating costs	62.6	62.6	62.6	62.6	62.6
Total annual costs	120.7	214.4	244.8	244.8	275.2
COSTS OF 1,950-Mw THERMAL PLANT					
Capital investment	266.6	448.6	448.6	448.6	448.6
Discounted capital cost at 8 percent	251.4	403.7	403.7	403.7	403.7
Annual capital charge at 12 percent	30.2	48.4	48.4	48.4	48.4
Annual fuel cost	92.6	92.6	92.6	208.4	208.4
Other costs	28.6	28.6	28.6	28.6	28.6
Total operating costs	121.2	121.2	121.2	237.0	237.0
Discounted operating costs	114.4	114.4	114.4	223.7	223.7
Annual full cost (cap. chg. plus disc. op. costs)	146.6	162.8	162.8	272.1	272.1
ANNUAL SAVINGS FROM NUCLEAR PLANT	25.9	-51.6	-82.0	27.3	-3.1

SOURCE: A.S. Gorshkov, *Tekhniko-ekonomicheskiye pokazateli teplovykh elektrostantsiy* (Technical-Economic Indicators of Thermal Power Stations), Moscow, Energoatomizdat, 1984, p. 225.

Table 3 offers some comparisons of the cost-effectiveness of nuclear and fossil-fired thermal electric plants made by Soviet engineers and by me. Column 1 in the table presents a cost comparison based on Soviet 1983 estimate costs of construction. These calculations use a discount rate of 8 percent to adjust for the longer construction time of nuclear plants, and then apply an annual interest charge of 12 percent on fixed and working capital. Annualized capital costs plus operating costs yield a full cost of l20.7 million rubles for 2,000 Mw of nuclear capacity compared with 146.6 million rubles for 1,950 Mw of fossil-fired thermal capacity—an apparent annual cost saving of 25.9 million rubles for nuclear power.

In Columns 2–5 of the same table, I have provided alternative cost estimates, which allow for differing assumptions about cost factors. Column 2 presents the cost comparison when capital costs are measured by the actual unit investment costs for 1976–80. In this case, the nuclear plant costs 51.6 million rubles more a year than the equivalent thermal electric plant. Calculations in column 3 are based on the assumption that improved safety systems increase the investment costs per unit by an additional 20 percent over 1976–80 actual unit costs. This assumption makes the annual costs of the nuclear plant 82 million rubles more than the thermal electric plant. Column 4 presents the cost comparison on the assumption that higher capital costs of nuclear plant are off-set by an increase in the price of nonnuclear fuel from 20 rubles/ton to 45 rubles/ton (equal to the marginal value of natural gas in Ukraine in 1979). This once again gives the nuclear plant the cost advantage. However, this advantage would disappear if the cost of the nuclear plant were to rise by 40 percent (see column 5). Clearly, these important long-run investment choices are very sensitive to small changes in underlying assumptions.

After the fact, we can see that low cost estimates put the construction administrations under some pressure. From the upward revision of the estimate costs of nuclear plants between the 1979 and 1985 editions of the Minenergo construction manual,[21] we can guess that the costs of building nuclear plants were rising substantially and that the industry was experiencing difficulty keeping within its construction budget. A close reading of an article by V. M. Chernyshenko

[21]Cf. P. S. Neporozhnyy, *Stroitel'stvo teplovykh i atomnykh elektrostantsiy* (Construction of Thermal and Nuclear Power Stations), 2 vols., Moscow, Stroizdat, 1979, and ibid., 1985.

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reveals that, indeed, the actual costs of construction and assembly of units 3 and 4 at Chernobyl', finished in 1981 and 1983 respectively, were well above the estimate costs for these units published in the industry construction manual in 1985.[22] At 1979 cost estimates, construction cost 190 rubles per kw of capacity; at 1985 cost estimates, construction cost 325 rubles per kw of capacity. To the degree that these rising costs were not reflected in actual construction budgets, there was pressure on those actually doing the construction to cut corners.

The Soviet approach to nuclear safety relies on design that can be periodically monitored with ease, but this does not guarantee that the monitoring will be performed. A new State Committee for Safety of Nuclear Power (Gosatomenergonadzor) was established in 1983, with provisions for the stationing of a representative at each Soviet nuclear plant. The organization has the authority to inspect plant construction and determine if the plant meets safety standards, but there are strong pressures on safety inspectors to approve completed projects regardless of whether they meet or fail to meet standards. For example, a recent article in *Sotsialisticheskaya Industriya* describes the unsuccessful attempt of A. Romanishina, technical inspector at the Rostov nuclear power plant's construction administration, to refuse defective work.[23] In this account, the administration's chief engineer signed the acceptance documents in place of the technical inspector.

Such relative disregard for safety seems to persist even after the accident at Chernobyl'. To be sure, following the disaster, immediate design changes were proposed to control power levels in RBMK reactors more closely even though some reduction in power output would ensue. These include increasing the number of absorber rods and changing control of them, as well as further monitoring of cooling systems and power levels. However, indications are that most existing RBMK reactors did not receive the proposed design changes before being pressed into full service to meet peak winter demand. Many of these reactors, like Chernobyl' units 1 and 2 (which were placed back in operation in October and November), were built earlier than the damaged unit No. 4 and hence even lack some of the safety features of that unit.

Costs of the Accident

The Chernobyl' disaster was costly.[24] According to *Pravda* of September 1, 1986, the direct costs of the accident were approximately 2 billion rubles, of which 400 million represented Chernobyl' unit No. 4 itself. This estimate included losses of enterprises, farms, and dwellings in the affected area; of crops and land; and of electric power and other output.[25]

These estimates by Finance Minister Boris Gostev do appear to cover such costs as the immediate evacuation as well as relocation and reemployment of 135,000 persons from 61 villages and towns; the cost of rehabilitating the Chernobyl' plant—entombing the damaged reactor, decontaminating the remaining reactors and plant environment, and relocating operating personnel; and the cost of measures to reduce danger to health and damage to agricultural and water resources.

Also included are direct costs of compensating evacuees, in terms of providing both housing and short-term subsidies. As of late October, the government had reportedly completed construction of some 8,000 dwellings (including "7,000 good brick houses") and was reported to be working on an additional 6,000 to house evacuees.[26] Moreover, evacuated families received compensation—4,000 rubles for individuals, 7,000 for a family of two, and 1,500 for each additional family member. Families were also to receive monthly payments of 30 rubles to compensate for the loss of private-plot food supplies, and some were to receive interest-free, 15-year loans.

The region around Chernobyl' will bear further economic costs over the long run from damage to the health of persons exposed to the initial release of radiation, involved in the clean-up efforts, or exposed to radioactivity through food and water supplies. Assuming that a worker in the region has a current annual income of 2,400 rubles and a work-life expectancy of approximately 30 years, the loss either immediately or in the near future of the 300 workers reported hospitalized as of October would add up to some 21.6 million rubles.

The permanent and temporary loss of power generation caused by the damage to various Chernobyl' units and the short-term shutdowns of other RBMK units during the summer was disruptive but manageable in the short term, as fossil-fuel plants were operated more intensively. Total output of electricity for the first 11 months of 1986 was 1,443 billion kwh, or some

[22]Chernyshenko, loc. cit.; and Neporozhnyy, *Stroitel'stvo . . .*, 1985.
[23]*Sotsialisticheskaya Industriya* (Moscow), Apr. 8, 1986.
[24]For a detailed discussion, see my article "Soviet Electric Power after Chernobyl': Economic Consequences and Options," *Soviet Economy* (Washington, DC), Vol. 2, No. 2, Spring 1986.
[25]The *Pravda* account reported donations of 488.7 million rubles from Soviet citizens and another 1.36 million from abroad to a special account to help Chernobyl' victims.
[26]*Pravda Ukrainy* (Kiev), Oct. 31, 1986; and *Pravda*, Sept. 1, 1986.

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4 percent more than in the comparable period of 1985. Thermal power stations alone generated 22 billion kwh of electricity above plan. Although shortages are likely to be felt more seriously in the winter, if October output levels are sustained through the end of 1986, the totals will still be ahead of 1985 by 2.5 percent, no small achievement considering that reserves of water for production of hydroelectric power were well below average this year.[27]

Although fossil-fuel production seems to be running ahead of plan in Ukraine, expansion of energy output from this sector is constrained by lack of generating capacity. Therefore, primary reliance for meeting the deficit caused by the shutdowns of the Chernobyl' reactors is likely to be placed on nuclear capacity at the Khmel'nytskyi, Rivne, South Ukraine, and Zaporizhya plants (see Table 4). Unfortunately, emergency work at Chernobyl' drew construction personnel from the Khmel'nytskyi project, delaying that project's completion. Start-up of new 1,000-Mw units at Kalinin, Rivne, and Zaporizhya in December and the momentarily expected start-up of a new unit at Balakovo more than make up for the loss of capacity at Chernobyl',[28] but clearly leave the USSR far short of the increase of 7,500 Mw in nuclear capacity targeted for 1986.

As winter approached, a number of measures were announced in Ukraine aimed at more efficient use of available capacity and conservation of power at peak times. Maintenance and repairs of power generating equipment are to be done at night and other off-peak periods. Factories are to stagger work shifts and to expand production to weekends and second shifts.[29] Newspaper reports tell of brown-outs (turning-off of lights) in cities, and there are frequent references to load shedding (cutting off users) at peak periods as well as to reductions in the frequency and voltage of power. The latter phenomena, not unprecedented, can cause serious problems: reduced frequency can slow machinery and damage computers, and reduced voltage can cause machines to burn out.

Reevaluating the Power Mix

According to official pronouncements, nuclear power is here to stay in the Soviet Union and Eastern Europe. Power sector spokesmen Valeriy Legasov and A. M. Petros'yants have reiterated the Soviet Union's commitment to nuclear power, and a new Ministry of Nuclear Power was split off from Minenergo to supervise the sector.[30] In November, the 42nd meeting of the Council for Economic Mutual Assistance in Bucharest reaffirmed Eastern Europe's ambitious goals for nuclear power (see the article by John Kramer). Yet, Soviet planners will unquestionably have to reevaluate plans and reconsider the technological structure of future power capacity even if the projected dependence on nuclear energy is not scaled down. Such changes will not come quickly in an industry that takes an average of eight years to design and five years to construct a nuclear reactor, but, at minimum, the Soviets are likely to phase out further construction of the current model of graphite-moderated reactor and reconsider current ambitious plans to site nuclear cogenerating and heating plants near large cities.

The USSR uses three different types of reactors in commercial power production—graphite-moderated (mostly the RBMK-1000) reactors, pressurized-water (VVER) reactors, and liquid-metal fast-breeder (BN) reactors. At the time of the Chernobyl' accident, there were 17 graphite-moderated units with capacities over 100 Mw, accounting for 56 percent of capacity; 19 VVER units, accounting for 42 percent; and one large breeder reactor, accounting for 2 percent of capacity. Because they are run at a higher percentage of capacity, the share of graphite-moderated units in power output was still higher.

Doubts about the RBMK technology have not yet brought to the surface similar doubts about the design of the VVER-1000. Production of this unit, which has been in widespread use for almost two decades, will doubtless continue even if the RBMK model were to be phased out. On the other hand, it will be hard to shift investment away from the RBMK units and into VVER units because the two technologies are engineered separately and hence have required different production facilities and components.

In the VVER-1000, light water serves as both moderator and coolant. The fuel and control rods are housed in a large cylindrical steel pressure vessel 4.5 meters in diameter and 22.6 meters high (roughly 15 x 73 feet). Two systems—borated water to absorb neu-

[27] *Ekonomicheskaya Gazeta* (Moscow), No. 47, November 1986, p. 7.

[28] *The New York Times*, Dec. 21, 1986; *Izvestiya* (Moscow), Dec. 21, 1986.

[29] Foreign Broadcast Information Service, *Daily Report: Soviet Union* (Washington, DC—hereafter *FBIS-SOV*), June 26, 1986, p. S/7.

[30] The *Information Report* states: "In accordance with the 'Main Lines of Economic and Social Development of the USSR for 1986–1990 and Up Until the Year 2000,' it is expected that nuclear power will be developed extremely rapidly in the European part of the country and in the Urals" (p. 45). See also, Petrosyants's statement broadcast by Moscow TASS International Service in Russian, 0625 GMT, June 24, 1986, trans. in *FBIS-SOV*, June 25, 1986, p. S/6. Creation of the new ministry was announced in *Izvestiya* (Moscow), July 16, 1986.

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Table 4: Soviet Nuclear Capacity, January 1, 1987

Plant / unit	Type	Location	Capacity, megawatts	Year on-line	Capacity, Jan. 1, '86	Planned by Jan. 1, '87	Total by Jan. 1, '87	Planned for 1987-90
Reactors in Operation								
Leningrad		Sosnovyy Bor,			4,000		4,000	
Number 1	RBMK-1000	45 miles west of	1,000	1973				
Number 2	RBMK-1000	Leningrad,	1,000	1975				
Number 3	RBMK-1000	NW RSFSR	1,000	1979				
Number 4	RBMK-1000		1,000	1981				
Chernobyl'		Prypyat', 60 miles			4,000		2,000	
Number 1	RBMK-1000	north of Kiev, Ukraine	1,000	1977				
Number 2	RBMK-1000		1,000	1978				
Number 3	RBMK-1000		1,000	1981				
Number 4	RBMK-1000		1,000	1983				
Number 5	RBMK-1000					1,000		
Number 6	RBMK-1000							1,000
Kursk		Kurchatov, in Central			4,000		4,000	
Number 1	RBMK-1000	Black Earth Zone,	1,000	1976				
Number 2	RBMK-1000	RSFSR	1,000	1979				
Number 3	RBMK-1000		1,000	1983				
Number 4	RBMK-1000		1,000	1985				
Number 5	??							1,000
Smolensk		Desnogorsk, 70 miles			2,000		2,000	
Number 1	RBMK-1000	SE of Smolensk,	1,000	1982				
Number 2	RBMK-1000	Central RSFSR	1,000	1985				
Number 3	??							1,000
Number 4	??							1,000
Ignalina		Sniečkus, Lithuania			1,500		1,500	
Number 1	RBMK-1500		1,500	1983[1]				
Number 2	RBMK-1500					1,500		
Beloyarskiy		Zarechnyy, 30 miles			900		900	
Number 1	AMB-100	east of Sverdlovsk,	100	1964				
Number2	AMB-200	Urals	200	1967				
Number 3	BN-600		600	1980				
Number 4	BN-800							800
Bilibino ATETs		Bilibino, Chukchi ASSR,			48		48	
Number 1	VK-12	Siberia	12	1973				
Number 2	VK-12		12	1974				
Number 3	VK-12		12	1975				
Number 4	VK-12		12	1976				
Armenia		Metsamor, 25 miles			800		800	
Number 1	VVER-440	west of Yerevan	407	1976				
Number 2	VVER-440		408	1979				
Balakovo		Balakovo			1,000		1,000	
Number 1	VVER-1000		1,000	1985				
Number 2	VVER-1000					1,000		
Number 3	VVER-1000							1,000
Kalinin		Udomlya,			1,000		2,000	
Number 1	VVER-1000	Kalinin Oblast	1,000	1984				
Number 2	VVER-1000	Central RSFSR				1,000[2]		
Number 3	VVER-1000							1,000
Number 4	VVER-1000							1,000

(Table continued on p.12)

[1]Start-up of the first Ignalina RBMK-1500 is dated 1983, although only one 750 MW turbogenerator was installed at that time.
[2]Start-up reported in *The New York Times*, Dec. 21, 1986.

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Table 4: Soviet Nuclear Capacity, January 1, 1987 (continued)

Plant/unit	Type	Location	Capacity, megawatts	Year on-line	Capacity, Jan. 1, '86	Planned by Jan. 1, '87	Total by Jan. 1, '87	Planned for 1987-90
Reactors in Operation								
Kola		Polyarnyye Zori,			1,760		1,760	
Number 1	VVER-440	Kola Peninsula,	440	1973				
Number 2	VVER-440	NW RSFSR	440	1974				
Number 3	VVER-440		440	1981				
Number 4	VVER-440		440	1984				
Novovoronezhkiy		Novovoronezhskiy,			2,455		2,455	
Number 1	VVER-210	30 miles south of	210	1964				
Number 2	VVER-365	Voronezh, Central	365	1970				
Number 3	VVER-440	Black Earth Zone,	440	1971				
Number 4	VVER-440	RSFSR	440	1972				
Number 5	VVER-1000		1,000	1980				
Rivne		Kuznetsovsk, in			880		1,880	
Number 1	VVER-440	western Ukraine	440	1980				
Number 2	VVER-440		440	1981				
Number 3	VVER-1000					1,000[3]		
South Ukraine		Konstantinovka,			2,000		2,000	
Number 1	VVER-1000	Nikolayev Oblast,	1,000	1982				
Number 2	VVER-1000	Ukraine	1,000	1984				
Number 3	VVER-1000							1,000
Number 4	??							??
Zaporizhya		Energodar, Kakhivka			2,000		3,000	
Number 1	VVER-1000	Reservoir, Ukraine	1,000	1984				
Number 2	VVER-1000		1,000	1985				
Number 3	VVER-1000					1,000[2]		
Number 4	??							1,000
Number 5	??							1,000
Number 6	??							1,000
Khmel'nytskyi		Neteshin, Ukraine						
Number 1	VVER-1000					1,000		
TOTAL					28,343	7,500	29,343	—

[3]Start-up reported in *Izvestiya* (Moscow), Dec. 21, 1986.

trons, and control rods—are used to control reactivity in the 151 fuel elements. There is a two-loop water circulation system in which pipes carrying the water outflow from the reactor pass through cooler water from the second loop in the multiple channels of a heat exchanger to produce steam for the generator. Water in the second loop serves both to transfer power to the turbines and to cool the reactor vessel, so its supply is crucial to the safety of the system.

Like the RBMK, the VVER reactor has roughly 10 times as many valves (approximately 30,000) as its fossil-fuel equivalent—a design feature that complicates emergency procedures and heightens the risk of loss of coolant. A recent Western model, the advanced pressurized-water reactor designed jointly by Westinghouse and Mitsubishi, places the core well below the cold-leg pipe and loop seal so that a rupture of a pipe will not uncover the core, but in the current Soviet design, loss of coolant can leave the core uncovered. The main disadvantage of the Soviet VVER is the need to manufacture and test the pressure vessel and its components on-site.

Although the future of the pressurized-water reactor seems secure at the moment, plans for rapid expansion of nuclear heat supply must be undergoing serious reevaluation in light of the Chernobyl' events. The 1986–90 plan for nuclear power calls for completion of large heat supply plants (each with two 500-Mw reac-

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Table 4: Soviet Nuclear Capacity, January 1, 1987 (concluded)

Plant / unit	Type	Location	Capacity, in Mw	Plant/unit	Type	Location	Capacity, in Mw
Additional Reactors Planned, 1987-90							
Bashkir		Agidel'		Odessa ATETs		Teplodar	
Number 1	VVER-1000		1,000	Number 1	VVER-1000		1,000
Gorkiy AST				Number 2	??		1,000
Number 1	VVER-500		500	Rostov		Volgodonsk	
Number 2	??		500	Number 1	VVER-1000		1,000
Krymsk		Shchelkino		South Urals			
Number 1	VVER-1000		1,000	Number 1	??		1,000
Kharkiv ATETs				Tatar		Kamskiye Pol'ya	
Number 1	VVER-1000		1,000	Number 1	??		1,000
Number 2	??		??	Voronezh AST			
Kostroma				Number 1	VVER-500		500
Number 1	RBMK-1500		1,500	Number 2	??		500
Minsk ATETs		Dukora					
Number 1	VVER-1000		1,000				
Number 2	??		1,000				

SOURCES: Reactor start-up dates are from *Elektroenergetika i energeticheskoye stroitel'stvo SSSR* (Power Engineering and Energy Construction in the USSR), Moscow, Informenergo, 1977, p. 105; ibid, 1980, pp 105–06; P.S. Neporozhnyy, *Stroitel'stvo teplovykh i atomnykh elektrostantsii* (Construction of Thermal and Atomic Electric Power Stations), Moscow, Stroyizdat, 1979, p. 894; ibid., 1985, p. 576; Philip Pryde, "Nuclear Power," in Leslie Dienes and Theodore Shabad, *The Soviet Energy System*, Washington, DC, V.H. Winston and Sons, 1979, p. 156; Theodore Shabad, "News Notes," in various issues of *Soviet Geography* (Washigton, DC) for 1978-86; US Central Intelligence Agency, *USSR Energy Atlas*, Washington, DC, 1985, p. 67; and the author's individual plant files drawn largely from Soviet publications *Atomnaya energiya*, *Elektricheskiye stantsii*, *Energeticheskoye stroitel'stvo*, and *Teploenergetika*. Plant locations are based on Pryde, Shabad, and the author's individual plant files. This table excludes reactors at these plants: Siberian, Shevchenko, Dimitrovgrad (Melekess), and Obninsk.

tors), at Gorkiy and Voronezh, as well as nuclear cogenerating plants at Odessa and Minsk, which would use two VVER-1000 units each to produce both power and heat. As stipulated in official plans, the Odessa plant is situated 25 kilometers from the city; the Gorkiy plant is located 2 kilometers from the city limits, or 10 kilometers from the center of population.[31]

Ministry officials have assured the public that the design of these units includes a whole series of special features and components to assure reliability and to prevent transfer of radioactivity through the thermal delivery system. Among the safety features they mention are: low pressure in the primary circuit and moderate power density in the core to enhance core cooling; natural (as opposed to pumped) circulation of primary-circuit coolant; location of all primary equipment in a single containment structure; two-vessel design that places the pressure vessel inside a containment vessel; and use of a three-loop heat delivery system.

Despite such assurances, the ambitious programs to heat whole urban districts by siting nuclear plants near population centers in both the Soviet Union and Eastern Europe must certainly be open to serious question after Chernobyl'. Nonetheless, it will be difficult and disruptive to reverse plans that are already well along. The Gorkiy nuclear heating plant has received its first reactor vessel, and assembly of the first VVER reactor has begun. Most of the investment already in place would have to be written off if the planners were to decide to shift to conventional cogenerating plants or to fossil-fuel heating plants for these sites.

Along with the continued production of conventional slow-neutron reactors, the Soviet Union plans to put additional resources into commercial-sized prototypes of the liquid-metal fast-breeder reactor. A commercial-scale prototype breeder reactor, the BN-600 is in use at Beloyarskiy, where a still larger BN-800 is being constructed. The 1986–90 FYP calls for development of a new generation breeder, the BN-1600, with a reactor volume and thermal capacity twice that of the BN-800.[32] These reactors use a pool arrangement that

[31]A. Pasenkov et al., "Nuclear Heat Supply Systems in CMEA Countries," *IAEA Bulletin* (Vienna), Vol. 26, April 1984.

[32]E. I. Chukardin, "Technological Progress in Nuclear Power of the USSR in the 12th FYP," *Teploenergetika* (Moscow), January 1986, pp. 9–12.

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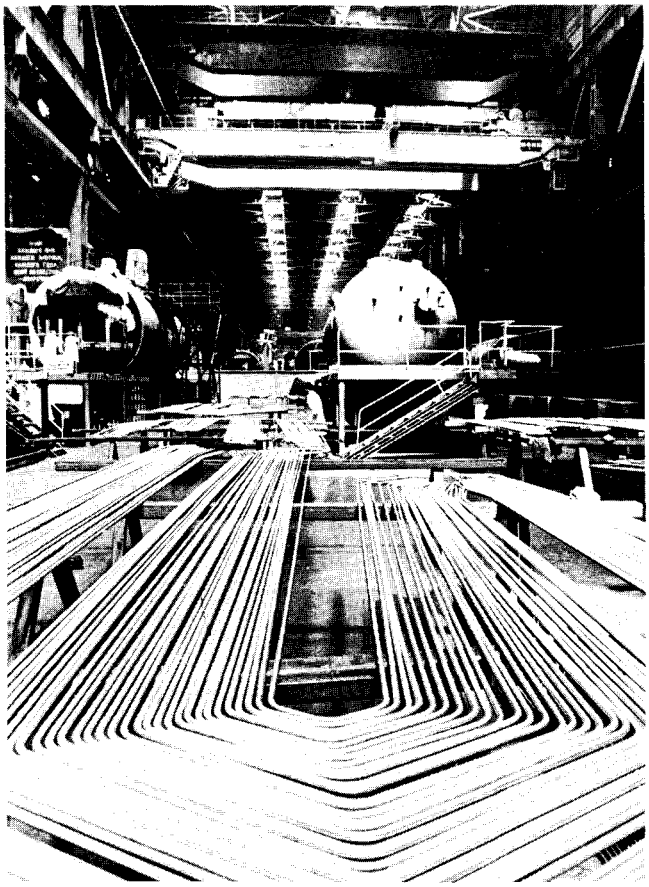

Generator tubing at the case-equipment shop of the Atommash nuclear power engineering plant in Volgodonsk in July 1985.

—TASS from Sovfoto.

places the core, pumps, intermediate heat exchangers, and biological shielding inside the reactor vessel.[33] In the reactor, the fuel—a mixture of plutonium and uranium–238—is contained in stainless-steel rods. The outer rods and the top and bottom of the inner rods consist mostly of depleted uranium, which is transmuted to plutonium by neutron capture. There are three separate coolant loops. Sodium is circulated around the fuel rods in the primary loop and in the secondary loop, where it interfaces with a steam generator containing circulating water and steam. The steam produced drives steam turbine generators.

The liquid-metal fast breeders involve complex technologies requiring high-grade steels, sodium-to-water steam generators, highly processed nuclear fuels, and large turbines. They do not use a moderator to slow down neutrons, but utilize neutrons at high energy levels to induce fission. Safe design requires that the fuel in the core, the liquid-metal coolant, and the feed water do not come into direct contact. The design complexities, high temperatures, and high energy levels of the breeder technology present more risks than conventional slow-neutron reactors, but their ability to transmute uranium–238 into fissionable plutonium makes them a potentially inexhaustible energy source.

It may be this latter consideration that has led Soviet engineers to bring the liquid-metal breeder to the brink of commercial use at a point when the underlying engineering and materials base is not well developed, for the Soviets appear to have a strong desire for self-sufficiency in fuel supply. (This may be less critical now that slowing growth of nuclear power in the West has depressed the price of uranium on the world market and eased concerns, at least in the West, that the demand for fuel in light-water reactors might outstrip the availability of uranium reserves.) Given the difficulties that the Soviet nuclear industry has had in implementing safe conventional reactors, their decision to forge ahead with the breeder reactor seems risky to say the least.

A more cautious approach would involve turning to the Western market to make up the difference between desired increments to power capacity and available domestic supply. A rational shopping list for the industry would include gas turbines for peak loads, efficient West German boilers to burn Ekibastuz coal at low temperatures, and, if the Soviets are set on pursuing the nuclear option, any of 23 small reactors (400–600 megawatts) that are available from 17 different Western companies.[34] Soviet engineers are expressing interest in a new generation of small nuclear plants that are designed to provide automatic passive cooling of the reactor core without need to rely on back-up systems. Examples of such "inherently safe" reactor designs are the West German high-temperature gas-cooled reactor, the Swedish PIUS (process inherent ultimately safe), and a small (140-Mw) liquid-metal breeder reactor designed by General Electric. Each of these Western designs has something to offer the Soviet industry, but it will take a substantial shift of an industry afflicted with gigantomania to take advantage of these new technologies conceived for small size, passive safety, and modular fabrication.

There are competing plans for investment in nonnuclear power facilities that might be given higher priority now for a number of reasons, including probable lags in commissioning nuclear plants, changed perception of risk, the fall in the world price of oil, and increases in

[33]The discussion that follows is drawn from Paul Josephson, "The LMFBR and the Breeder Reactor Program of the Soviet Union," Cambridge, MA, working paper, June 27, 1980; and Dollezhal' and Koryakin, op. cit.

[34]*The Economist* (London), Mar. 29, 1986, p. 73.

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A technician checks radiation levels at the rod heads of reactor unit No. 1 at the Chernobyl' station in September 1986.

—TASS from Sovfoto.

the capital costs of nuclear plants once they are redesigned to incorporate safety features. Unfortunately for Soviet planners, with the exception of some urban cogenerating capacity such as the Volgograd TETs-3 and some pumped-storage hydro capacity, the largest of which is the 1,200-Mw Zagorsk project, there are relatively few conventional thermal units under construction in the European USSR that can be brought on-line quickly. Plans call for the acquisition of small (150-Mw) gas turbine units to meet peaking needs in the South and Central regions—a development that could be supplemented by importing gas turbine units—and for experimental work on design of compressed-air energy-storage gas turbines, an effort that will not ease bottlenecks in the current five-year plan.

Major Soviet efforts to construct new thermal power capacity have centered on mine-mouth power plants in the Ekibastuz Basin in northern Kazakhstan and in the Kansk-Achinsk lignite basin in Eastern Siberia.[35] The first plant at Ekibastuz reached design capacity of 4,000 Mw in 1984, and a second large plant is under construction. A 1,150-kilovolt AC line capable of transmitting 3,400 Mw of the plant's power has been completed to deliver power as far away as the Urals.[36] A 2,414-kilometer, 1,500-kilovolt DC line capable of transmitting 6,000 Mw of power to central European Russia was eliminated from draft versions of the 12th Five-Year Plan but might be reconsidered in the wake of the Chernobyl' accident.

The future of these mine-site complexes hinges as much on refinements in Soviet technology for burning low-calorific, high-ash coal as on advances in long-distance transmission technology. So far, the Soviets have had difficulty designing boilers to burn such coal at a sufficiently low temperature to avoid slagging and fouling of the boiler. One solution would be to pur-

[35]Jan Vanous, *PlanEcon Report* (Washington, DC), July 24, 1986. The Ekibastuz coal production association supplied the country with 85.7 million tons of coal in 1986, according the *Ekonomicheskaya Gazeta*, No. 52, December 1986, p. 3.

[36]Pasenkov, loc. cit., p. 24.

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chase high-grade equipment from the West—notably from West Germany. Until some of the technical problems are solved, however, these large new thermal power complexes are unlikely to produce at the levels projected in the current plans.

Conclusion

If the late Soviet General Secretary Leonid Brezhnev benefited from some unanticipated windfalls during his tenure in power (e.g., the post-1973 surge in oil prices), Gorbachëv has had to weather significant unanticipated costs—notably the recent fall in the price of oil and the Chernobyl' accident. Even before the Chernobyl' disaster cast its cloud over the extravagant Soviet plans for nuclear power, Western economists argued that the economic targets of the 12th Five-Year Plan were overly optimistic. In the power sector, capacity was to be increased by 69,000 Mw, the same amount as targeted for 1981–85. Actual additions in that earlier period amounted to only 49,000 Mw, and there is good reason to expect even smaller increases in 1986–90. In 1981–85, the nuclear sector expanded capacity by 15,820 Mw. However, only eight of 10 RBMK reactors and six of nine VVER-1000 reactors planned for start-up in that period actually came on line. The need to divert resources to repair the damage in Ukraine and the delays that are likely to result from a reevaluation of energy plans suggest strongly that electric power capacity will be the most serious bottleneck in the current five-year plan—although the Soviet Union seems to have managed the bottleneck well during 1986.

Unless the Soviet Union is willing to spend a portion of its increasingly scarce foreign exchange on equipment for the power industry, electricity supply will constrain even modest rates of industrial growth. Beyond its not insignificant immediate impact on the Soviet economy, the Chernobyl' disaster and the policy choices following from it have thus brought disruption to a particularly vulnerable sector of Soviet medium-term plans, creating a bottleneck in electric power that is likely to impair Gorbachëv's drive to accelerate growth and productivity.

This circumstance only increases the pressures on Soviet planners and officials to assign higher priority to production than to safety in the nuclear power sector, as evidenced by the rapid restarting of units 1 and 2 at Chernobyl' and the all-out operation of other RBMK units without incorporation of most of the post-Chernobyl' recommendations for improvements in safety systems. The handling of these difficult trade-offs by Soviet decision-makers since Chernobyl' is hardly reassuring.

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Chernobyl' and Ukraine

David R. Marples

Over eight months have passed since the explosion at the fourth reactor unit of the Chernobyl' nuclear power plant in Ukraine. During this period, our knowledge of the events of April 26, 1986, and the aftermath of the accident has increased considerably. Concerning the technical aspects of the disaster, the USSR State Committee for Utilization of Atomic Energy presented a detailed 300-page report to a Vienna meeting of the 112-member International Atomic Energy Agency (IAEA). This report was well received by Western scientists, many of whom have commented publicly on what appeared to them a remarkable display of *glasnost'* (openness) by the Soviet authorities, which they felt helped to atone for the Soviets' original failure to report the accident until prompted by Swedish protests.

However, the extensive Soviet report to the IAEA seems more a sign that the Chernobyl' explosion had acquired truly international significance than it is a manifestation of any new openness on the part of the Soviet leadership under General Secretary Mikhail Gorbachëv. Moreover, the Chernobyl' accident has had little effect on the workings of the political and economic system of the Soviet Union. Blame for the accident was placed on a few, relatively low-level, functionaries while Soviet nuclear energy policies remained on the whole untouched.

The Soviet party leadership also went largely unscathed. In fact, Gorbachëv has carefully incorporated the Chernobyl' accident into a campaign whose declared goal is the removal of all nuclear weapons from the face of the earth by the year 2000. In his first public statement about Chernobyl' on Soviet television on May 14, the Soviet leader emphasized that the accident had demonstrated the futility of a nuclear weapons buildup because it illustrated what would happen if even one small nuclear warhead were detonated. Soviet propagandists have pursued this line vigorously, but always with the proviso that nuclear weapons and the civilian usage of nuclear power are not the same thing. Indeed they are not. I would also make the sequential deduction that the Chernobyl' accident concerns the operation of Soviet nuclear power plants rather than international arms control.

Gorbachëv has also used the IAEA in this political strategy. Before Chernobyl' occurred, the IAEA's main role, in practice if not in theory, was to ensure that civilian nuclear power plants were not being used to produce plutonium, tritium, and other elements for nuclear weapons programs. Soviet cooperation with the IAEA has given the impression that the Soviets are interested in broadening the IAEA's role.[1] In August 1985, for example, the USSR for the first time permitted an IAEA inspection of its nuclear facilities. But the sites in question, an experimental station near Moscow and the Novovoronezh "model" nuclear plant, which has containment domes over its reactors, made for a relatively innocuous inspection.

The political future of Volodymyr Shcherbytskyi, the 68-year-old Ukrainian party leader, has so far not been affected. There has been speculation that he was on the way out since March 1985, when Gorbachëv took over the Soviet leadership.[2] Chernobyl' appeared to be an ideal excuse to get rid of him. Such speculation was fueled by Shcherbytskyi's marked absence from the Chernobyl' region in the days immediately after the accident. On May 2, he accompanied Politburo members Yegor Ligachëv and Nikolay Ryzhkov

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[1]For example, on July 7, 1986, TASS reported that the USSR had asked the IAEA to supervise the construction of a "safe reactor."

[2]See, e.g., *The New York Times*, May 8, 1986.

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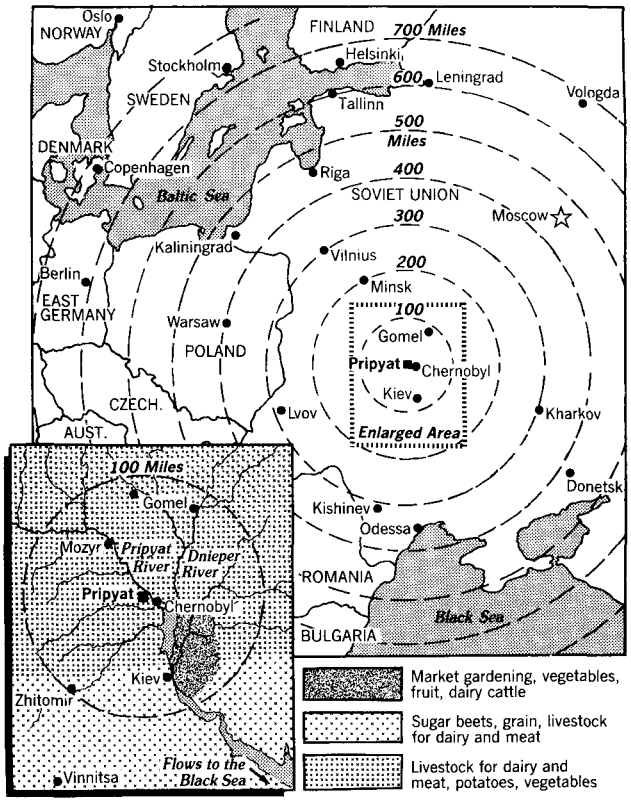
The Chernobyl' Setting



—Adapted from map by David Cook in *The Washington Post*, Apr. 30, 1986.

to the area, but only in a passive role. He then disappeared from public view. (In contrast, his Belorussian counterpart, Nikolay Slyunkov, was highly visible during the evacuation of citizens from the Gomel' oblast's southern regions, several kilometers north of the Chernobyl' nuclear power plant.)

In July, however, Shcherbytskyi showed up at Chernobyl' and has since visited the area several times, most recently on August 29, with Ukrainian Premier Oleksander Lyashko; and he attended a meeting of the Prypyat' city party committee of the Communist Party of Ukraine. While the active role in the cleanup of the Chernobyl' district of Kiev oblast has been left to the government commission created for this purpose (headed by a succession of deputy premiers of the USSR government, namely, Boris Shcherbina, Vladimir Gusev, Gennadiy Vedernikov), Shcherbytskyi has remained in firm control of the Ukrainian party apparatus. The same can be said of Oleksander Revenko, who took over the leadership of Kiev oblast as first secretary only in November 1985. He has not been publicly reprimanded or even warned as a result of the disaster.

So who has taken the blame? In the first place, two all-Union ministries have been purged of personnel: Power and Electrification, and Medium Machine Building (the ministry in charge of nuclear weapons production). In addition, the State Committee for Safety in the Atomic Power Industry, established in 1983 after a crisis at a reactor-manufacturing plant in Rostov oblast of the Russian Soviet Federated Socialist Republic, has also been heavily criticized.

On July 19, a meeting of the CPSU Politburo in Moscow declared:

The Ministry of Power and Electrification of the USSR and the State Committee for Safety in the Atomic Power Industry were guilty of lack of control over the situation at the Chernobyl' AES [Nuclear Power Station] and did not take the necessary measures to secure compliance with safety regulations and to prevent breaches of discipline and operating regulations at the station. Irresponsibility, negligence, and indiscipline led to grave consequences.[3]

The chairman of the Atomic Power Safety Committee, Yevgeniy Kulov, a first deputy minister of Power and Electrification, Gennadiy Shasharin, and the first deputy minister of Medium Machine Building, Aleksandr Meshkov, were all relieved of their duties. The announcement was followed by an odd statement that Anatoliy Mayorets, the minister of Power and Electrification, also "deserved" to be dismissed but was spared because of his brief time in office.[4]

Another series of reprimands and firings occurred in mid-August, after a meeting of the Party Control Committee of the CPSU Central Committee. The dismissed included Aleksey Makukhin, a first deputy minister of Power and Electrification, V. Ya. Sydorenko, the first deputy chairman of the USSR State Committee for Safety in the Atomic Power Industry, as well as another official from the Ministry of Medium Machine Building.[5] The director and the chief engineer of the Chernobyl' station, V. Bryukhanov and N. Fomin, were also dismissed from their posts and thrown out of the party. Tens of party members have been expelled from the Prypyat' party committee, including 27 at the start of September alone, allegedly for "cowardice and panicking."[6] Those plant officials who had run away from the scene of the disaster were described in scornful terms by the press. But by October, accord-

[3] *Pravda*, (Moscow) July 20, 1986.
[4] Ibid.
[5] Ibid., Aug. 14, 1986.
[6] Ibid., Sept. 2, 1986.

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ing to the new director of the Chernobyl' station, Erik Pozdyshev, some of them had been reinstated, against his will, in their jobs by the courts.[7]

The conclusion to be drawn from these reports is that the dismissals and reproofs were essentially low level, and often ritualistic. Nothing was done that might compromise the higher party echelons or the Soviet nuclear energy policy. The Ministry of Power and Electrification has been cut quite severely, but most of its functions in the nuclear sphere may have been transferred to a newly created Ministry of Nuclear Energy.[8] The retribution visited on Medium Machine Building officials is curious because obviously the reactor that exploded was not for military purposes.[9] But this does not mean that, at some point, the other Chernobyl' reactors may not have been used for the production of elements for military use, such as tritium.

Those officials who have survived the crisis—the names of Andronik Petrosyants, chairman of the State Committee for the Utilization of Atomic Energy, Valeriy Legasov of the same committee, and Yevgeniy Velikhov, vice-president of the Soviet Academy of Sciences, spring to mind—have acquired enhanced status. The main reason for this is that while low-level errors at the Chernobyl' plant have been acknowledged, the viability of the nuclear plants themselves and the future of the industry are being reemphasized.

Health Repercussions

How has the population in the area been affected by the radioactive fallout? The draft version of the Soviet report to the IAEA stated that the radiological effects "will be insignificant against the natural background of cancerous and genetic diseases." On the other hand, John Gofman, a University of California professor emeritus, has postulated that approximately one million persons will contract cancer over the next several decades as a result of the accident at Chernobyl', and that about half of this number will die from cancer.[10] Given the extreme disparity between these two claims, however, it seems safe to say that neither statement can stand as a viable estimate of the aftereffects of the disaster.

In Vienna, the Soviets maintained that approximately 3.5 percent of the contents of the reactor core had been emitted as a result of the explosion. Earlier, however, fairly reliable Soviet sources had spoken of 10 percent.[11] Which statement is more reliable? The difference is of the utmost significance. The Soviets also indicated four stages in the release of radioisotopes from the damaged reactor:

Members of the staff of a Kiev hygiene research institute check the radioactive background level in the capital city of Ukraine.

—TASS from Sovfoto.

1. A release of dispersed fuel on April 26, the composition of which corresponded to that of the irradiated fuel enriched by iodine, cesium, and tellurium isotopes.
2. A decrease in the rate of radiation release from April 26 to May 2, because of the efforts to put out the reactor fire with sand, boron, and lead pellets.
3. A rapid rise in the release of fission products, especially iodine, because of heating at the core of the reactor between May 2 and May 6. (It was after this stage that health warnings were issued to the residents of Kiev, and presumably to other cities such as Chernihiv and Gomel'.)
4. A rapid fall in releases from May 6 onward.[12]

[7]Ibid., Oct. 10, 1986.

[8]The new ministry's task is to raise "responsibility for the development of nuclear power." It is headed by Nikolay Lukonin, formerly director of the RBMK-1500 nuclear power plant in Lithuania. See TASS, July 21, 1986.

[9]On Feb. 10, 1986, Radio Kiev confirmed that the Chernobyl' plant had been integrated into the so-called Mir system of cooperation in nuclear energy between the USSR and the other CEMA countries. Electricity from the fourth reactor was exported to Hungary.

[10]Cited by Reuters (London) Sept. 10, 1986.

[11]See, e.g., David R. Marples, *Chernobyl & Nuclear Power in the USSR*, New York, St. Martin's Press, 1986, p. 125.

[12]USSR State Committee for Utilization of Atomic Energy, *The Accident at the Chernobyl' Nuclear Power Plant and Its Consequences*, Information Compiled for the IAEA Experts' Meeting, 25–29 August 1986, Vienna, Part 1, General Material, p. 34.

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Vehicles are checked for radiation upon leaving the 30-kilometer zone around Chernobyl' in May 1986; the sign reads, "Prohibited Zone."

—TASS from Sovfoto.

According to Sweden's Radiation Protection Agency, people exposed to high levels of radiation experience damage to tissue at a dose of 1 rem (roentgen equivalent in man); the minimum lethal dose is 200 rem; half of the people exposed to 450 rem would die within 60 days; and all those exposed to over 600 rem would die within 30 days.[13] All of the above figures relate to the rem intensity on immediate exposure. Over the course of a year, exposure to a cumulative dose of 450 rem would not necessarily cause a person serious harm.

The figures used by Gofman and others to estimate the final tally of deaths from the accident are based on the Soviet report to the IAEA in Vienna. They refer to those in the vicinity at the time of the accident. In the reactor area, firemen and plant operators reportedly received over 400 rem, while at a distance of 5 to 10 kilometers from the accident site, the rates were said to be over 1 rem per hour. Even 15 days after the accident, at a distance of 50 to 60 kilometers, levels were said to be 5 to 6 millirem per hour—hardly fatal, but very high nevertheless.[14]

But speculation on the eventual or even immediate fatality figures is unwise for two reasons. First, the effects of low-level radiation are still a matter of conjecture for scientists (in contrast to the effects of high-level radiation, which are well-known). Second, the figures do not take into account other factors, the most important of which is the gigantic clean-up operation undertaken in Chernobyl'.

Concerning the first point, the Soviets have stated that there is still some way to go in assessing the effects of given levels of radiation and determining the level of radiation to which workers in the nuclear industry can be exposed. On October 2, 1986, a new all-Union Center of Radiology was opened in Kiev, consisting of three institutes: Experimental Radiology;

[13]Cited in *The New York Times*, May 3, 1986.
[14]*The Accident at the Chernobyl' Plant*, op. cit., p. 37.

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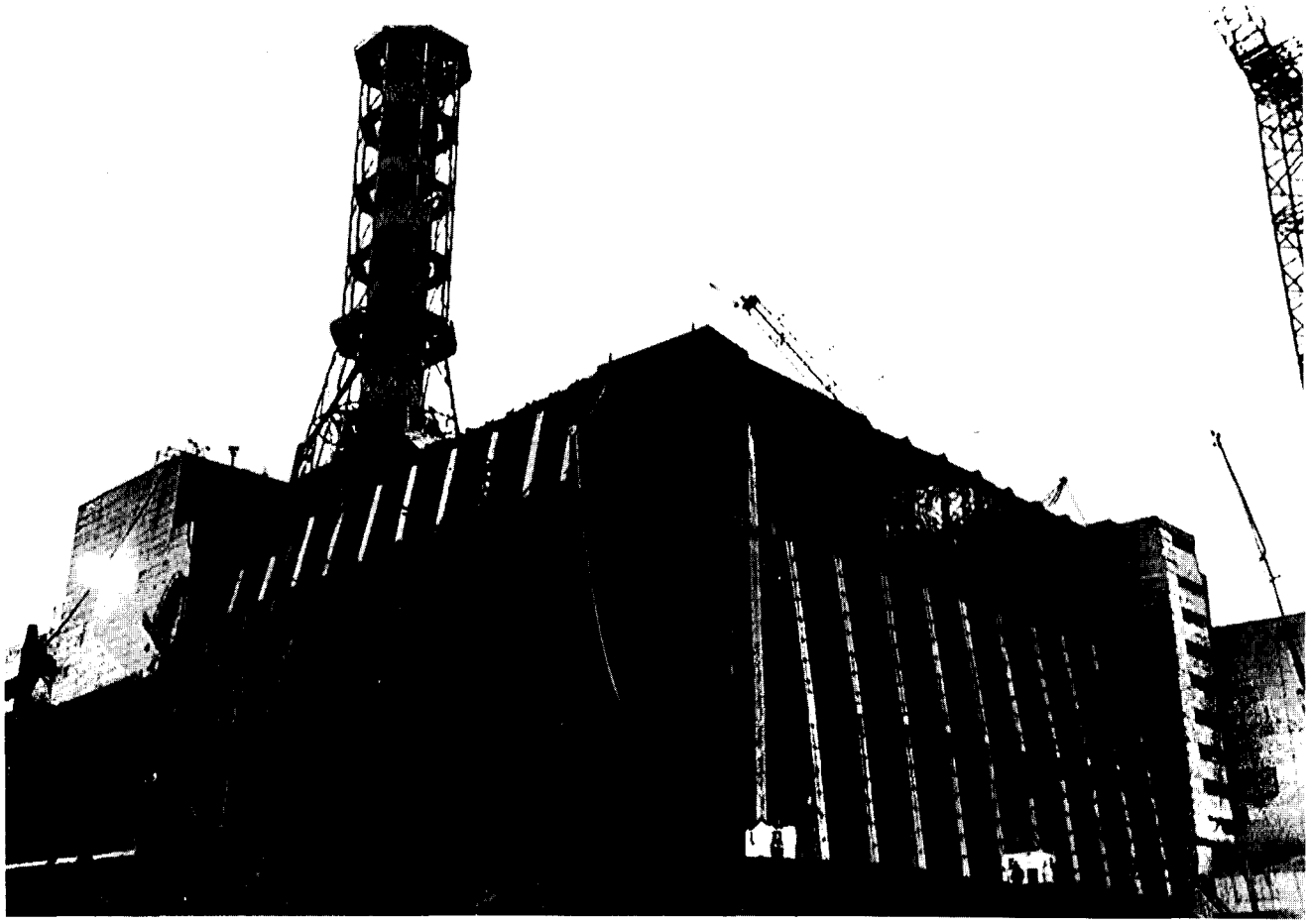
Clinical Radiology; and Epidemiology and the Prevention of Radiation Diseases. According to the Ukrainian Minister of Health, Anatoliy Romanenko, one of the goals of this new Center is to find the "maximum permissible radiation dose" for both sick and healthy people, and then to put forward "scientifically substantiated norms" for workers at nuclear power plants and operations linked to ionizing radiation.[15]

Clean-up Operation

It is because of earlier Soviet confusion over how to set norms that the clean-up operation after Chernobyl' has become such a dangerous undertaking, perhaps exceeding in its dimensions the immediate impact of the explosion and fire that left 31 people dead. First, let us look at the dimensions of this operation. Following the disaster, about 135,000 people were evacuated from Kiev oblast in Ukraine, Gomel' oblast in Belorussia, and Bryansk oblast in Russia. Three zones were demarcated around the ruined unit: a special zone, a 10-kilometer zone, and a 30-kilometer zone. About 90,000 residents were taken from their homes on the Ukrainian side of the border between April 27 and May 6, of whom about 23,000 were moved to the town of Polis'ke (located 40 miles west of Chernobyl') and the remainder to farmsteads in neighboring districts. On the Belorussian side, the evacuation was a longer process because hotspots of radiation continued to be detected several weeks after the accident. About 18,000 were evacuated, and Bragin, a town with a population of 7,000, was decontaminated without moving the residents out. Subsequently, the 30-kilometer zone had to be decontaminated. Old wartime watchtowers were placed around the 108-kilometer rim of the zone to prevent illegal entries. At the same time, not every village within the zone was evacuated because the radiation had not dispersed evenly. And in two villages on the Ukrainian side, the inhabitants were

[15] *News From Ukraine* (Kiev), No. 39, 1986.



Damaged reactor No. 4 at Chernobyl' is encased in a concrete "sarcophagus" to prevent radiation leakage.

—TASS via Wide World.

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returned to their homes as early as June. Uncertainty, a shortage of geiger counters to measure radiation, and ignorance of the region, all played a part in such decisions.[16]

There were two main tasks, both of which were declared to have been "virtually" completed by the beginning of October. First, the damaged reactor had to be encased in a huge concrete tomb, which the Soviets have termed a "sarcophagus." This concrete shell was built both above and below ground level. It required about 3 million cubic meters of concrete, and has a width of 74 meters.[17] The sarcophagus could not simply be a closed shell, however; it needed passageways for ventilation so that the reactor core could not catch fire or explode again. It is essentially a temporary solution—despite initial Soviet claims that it might last for thousands of years. Some Soviet scientists have stated that the containment will depend on future generations, who may discover better means of dealing with the damaged and still highly dangerous fourth Chernobyl' reactor. Moreover, the building of the structure was delayed because of a lack of good-quality cement.[18]

Second, the entire 30-kilometer zone has been (or is being) decontaminated by a variety of methods. These have included the digging of a trench to hold the run-off water from the reactor, the removal of contaminated topsoil from large areas of agricultural land, and the spraying of contaminated surfaces with a special solution—the so-called dry treatment—in which the solution used to spray the surface hardens into a film that holds the contaminated particles. This can then be removed, rolled, and dumped. The use of dump trucks complicated the situation immeasurably because the trucks carried radioactive particles on their wheels and churned up dust, which also bore traces of radioactive elements.[19]

That the entire process of decontamination would encounter major obstacles was never in doubt. What can be questioned, however, are the conditions in the danger zone and the way in which workers have been employed there. In the first days after the accident, it appears that the brunt of the clean-up work around the reactor was borne by coal miners, metrorail builders, employees of the USSR Ministry of Transport Construction, the police, and the army. Work around the reactor was measured in minutes rather than hours, and a strict limit on exposure to 10 rem of radiation was imposed, after which the worker in question was removed from the zone. This limit was soon raised to 25 rem.[20]

By May 6, military reservists had been brought into the zone, predominantly from the Baltic countries. Approximately 4,000 Estonians were "conscripted," often at night and with apparently little regard for their domestic situation—some were ill, others had wives who were about to give birth. Moreover, although the initial period of work in the zone was set at 30 days, with two days vacation during the month, this was extended first to two and then to six months, according to a series of articles in the Estonian Komsomol newspaper. Reportedly, the Estonians reacted violently. The reservists downed tools and went on strike for an undetermined period.[21] Soviet authorities have tried to cast doubt on the reports from Estonia, but the use of the same workers throughout the cleanup, and the resulting accumulation of high doses of radiation has been confirmed by various Soviet sources.

Thus, on September 2, 1986, *Pravda* revealed that the government commission entrusted with supervising the cleanup decided that the duration of the term of work should be extended and that "it is better if [decontamination] work continues to be done by the same staff. It is in a sensitive stage." The implication was that the lengthy period of work had enabled these workers to acquire the necessary experience to finish the job. New workers would take longer.

On October 24, 1986, the Ukrainian newspaper *Robitnycha hazeta* published a frank article about the cleanup and the housing that was being provided for the workers. It referred to the case of a concreter, Volodymyr Pryvydenko, who had been working in "hot spots"—an apparent reference to high-radiation zones—"from the very first days after the accident." The point of the article was that Pryvydenko, unlike some of his colleagues, did not have a place to live. His wife and four-month-old daughter were staying with relatives. It appears that Pryvydenko and others (presumably blue-collar workers or military reservists) have been in a high-radiation zone from the outset. But it is difficult to judge to how much danger they have been exposed unless one knows the level of radiation in that zone. Even in late August, single-figure amounts of rem per hour were being absorbed close to the

[16]Marples, op. cit., pp. 141–46.
[17]Radio Moscow, Oct. 6, 1986.
[18]*Pravda*, Aug. 6, 1986.
[19]*New Times* (Moscow), No. 29, July 28, 1986.

[20]TASS, June 6, 1986. A "volunteer" from Sakhalin reported that when he spent 30 days in Zone 1, "the most dangerous zone," the time limit for work was 30–60 minutes, after which he and his colleagues were sent immediately for medical attention. See *Lesnaya promyshlennost'* (Moscow) Aug. 30, 1986.
[21]Toomas Ilves, "Estonians Help at Chernobyl," *Radio Free Europe/RAD Background Report* (Munich), Sept. 10, 1986.

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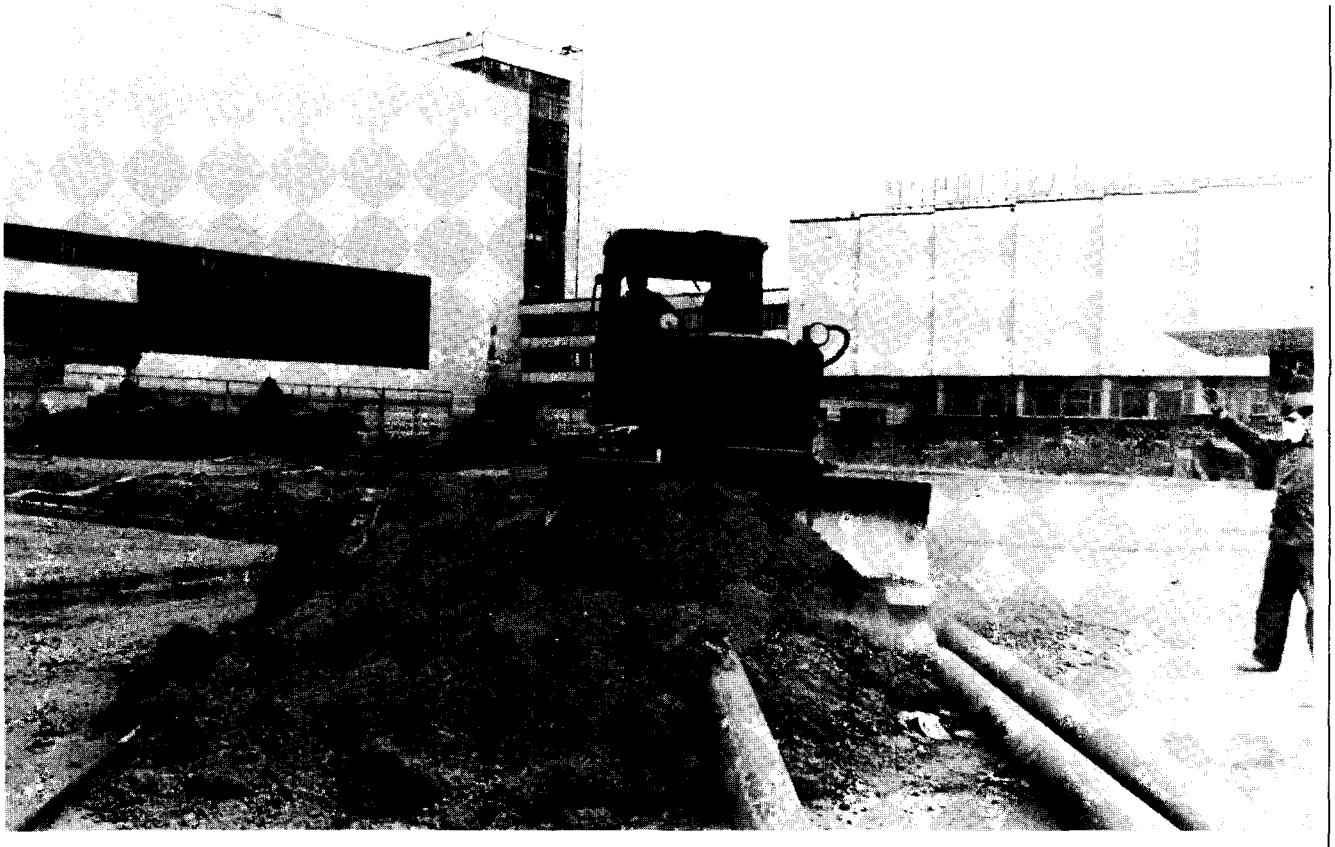

Clean-up work at the Chernobyl' plant on May 28, 1986: in the foreground, a bulldozer covers piping; at the rear, two armored personnel carriers.

—TASS from Sovfoto.

damaged reactor. Moreover, the working day is long, lasting from 10 to 12 hours. Since the object is to decontaminate highly irradiated areas, lives are clearly at risk, especially in view of the workers' lengthy spells in the 30-kilometer zone.

It is worth reiterating that the clean-up crew, which according to Soviet sources numbers in the thousands, has been exposed to high doses of radiation. According to an Estonian source, one Estonian worker has already died from radiation poisoning and others have been hospitalized.[22] Thus, calculations about future cancer rates attributable to the disaster are rendered meaningless. All that can be said is that additional casualties will certainly be incurred as a consequence of the cleanup.

Working conditions in the clean-up area are deplorable. According to *Robitnycha hazeta,* the collective's trade-union committee was complaining that it did not have the funds to provide protective clothing for the workers. "It is not because funds are meager," chided the newspaper's correspondent, "but rather it is a result of the lack of responsibility of the trade union concerned with their distribution."[23] But identifying organizational responsibility for the conditions is largely irrelevant in the context of cleaning up after the world's worst civilian nuclear disaster without protective clothing.

Two workers complained that they had no place to take a shower at the end of the working day. The showers were located at a sanatorium, which required a two-hour walk to be reached. The article emphasized that with winter imminent, it was time that mobile shower units were organized for the clean-up crews.[24] These workers had already been there for six months, however, and one wonders why the situation was not corrected earlier.

Housing is also a problem—as noted above in the case of Pryvydenko. Most of the workers were still living in summer accommodations in late October when cold weather had already set in. Various decrees about the need to transfer them to "warm lodgings"

[22]Toomas Ilves, "Additional Information on Estonians at Chernobyl'," *Radio Free Europe/RAD Background Report,* Oct. 14, 1986.
[23]*Robitnycha hazeta* (Kiev), Oct. 24, 1986.
[24]Ibid.

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had been adopted over the summer, but were not carried out. One worker voiced another common complaint when he stated:

We have received good quarters...but a new complication has arisen. We have nothing to put in them. The setting up of furniture stores has been approved, but it is not known how long we have to wait for them.[25]

Doctors at the medical-sanitation unit in the area—No. 126—had initially tended to the needs of nuclear plant workers and residents of Prypyat'. Almost 1,000 specialists were in the area at the height of the crisis but most had left by late summer. The remaining doctors were living in the village of Teteriv, in cramped conditions, with limited facilities.

The only solution proposed to these problems was to impose better discipline. One brigadier stated: "In our collective we do not forgive one another the smallest violation."

Reconstruction

What has happened to the people who were evacuated from the contaminated regions? A substantial number have been transferred for work elsewhere in the USSR. Occasionally, appropriate jobs have been found in the same oblast. The northern part of Gomel' oblast in Belorussia, for example, has a labor shortage. Consequently, workers evacuated from the southern districts have simply been transferred to the north. For the most part, however, the people have been dispersed, often very far away—to Kazakhstan, the western borderlands, the Baltic republics, Siberia.

Early in September, *Pravda* revealed that people had been allowed to return to the 30-kilometer zone to collect their belongings. Residents of the villages of Cheremoshne and Nivetskye had been allowed to return permanently.[26] But empty villages abound. In mid-September, the newspaper *Pravda Ukrainy* discussed cases of theft and burglary in the 30-kilometer zone. The Ukrainian Ministry of the Interior had received complaints about poor police work. One evacuee had returned to the Chernobyl' area, ostensibly to check that his property was safe. He was later apprehended breaking the locks on his neighbors' doors. Some maintenance workers from the Chernobyl' nuclear plant were caught stealing goods from an abandoned Prypyat' restaurant.[27]

Over the summer, a decision was made to restart Chernobyl' units 1 and 2 in October 1986. This is not the place to discuss the wisdom of such a decision. For the plant workers, however, it entailed further sacrifices. Many are housed in tents or on boats on the Prypyat' River. Others have spent months at a Pioneer camp near Chernobyl'.[28]

Since the summer, however, an enormous construction program has been under way employing some 50,000 workers, including construction squads from Ukraine, Belorussia, Russia, Kazakhstan, Uzbekistan, Tadjikistan, Georgia, Armenia, Latvia, and Lithuania. The squads were given two main tasks. First, they were to build housing in various districts of Kiev oblast, particularly in Makariv, that could accommodate, on a more or less permanent basis, 33,000 of the people who had been evacuated in May, and who were to be moved back into the area either to their state or collective farms, or to enterprises formerly functioning in the now-deserted town of Prypyat'. By August 17, according to the newspaper *Sel'skaya zhizn,* the first of 52 new villages to house evacuees had been completed. Called Ternopil'ske, the village is located in Makariv district, west of Kiev. Some 7,250 three-room houses had also been built in Kiev oblast and approximately 4,000 in Gomel' oblast by October 1.

Second, they were to build by October 1 a new town called Zelenyi Mys on the banks of the Dnieper River approximately 30 kilometers from the nuclear plant for the shift workers of the nuclear plant. Plant personnel work 15-day shifts at the station, followed by 15 days of rest with their families in Kiev or Chernihiv. Initially, Zelenyi Mys was to house 10,000 workers.[29]

Various high-level delegations visited the site of the new town in August: party secretary of the Central Committee of the Communist Party of Ukraine, Borys Kachura, on August 7; Soviet Premier Nikolay Ryzhkov and KGB chief Viktor Chebrikov, on August 8–9;[30] Ukrainian party chief Shcherbytskyi and Ukrainian Premier Lyashko, on August 29.[31] All conveyed the same message: the builders must work harder to complete their work by the October 1 deadline. But in late August, a Soviet source complained about the slow progress of construction at Zelenyi Mys, where the "enthusiasm of the builders is not always backed up with sound organization" and "manufacturers sometimes supply goods that have to be rejected."[32]

[25]Ibid.
[26]*Pravda,* Sept. 2, 1986.
[27]*Pravda Ukrainy* (Kiev), Sept. 16, 1986.
[28]See, e.g., *Radyanska Ukraina* (Kiev), Oct. 3, 1986.
[29]*Pravda,* July 23, 1986.
[30]*Izvestiya* (Moscow), Aug. 10, 1986.
[31]Radio Moscow, Aug. 29, 1986.
[32]*Sovetskiy Patriot* (Moscow), Aug .24, 1986.

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Chernobyl' Nuclear Power Station central control room operator V. Kryvenko, left, and a shift director at the No. 1 reactor D. Ovcharenko rest at the "Fairy Tale" summer camp after a work shift on May 10, 1986; at right, a view of the Pioneer camp, which housed plant personnel and those involved in the massive clean-up effort.

—TASS from Sovfoto.

In late October, the Soviet Ukrainian press revealed that a more permanent abode for the nuclear plant staff was under construction. Whereas Zelenyi Mys is a hastily improvised, low-quality housing project, more care is being taken with the new town of Slavutych, located in the woodlands of Chernihiv oblast. The location was chosen by the all-Union and Ukrainian institutes of engineering-technical research, and the town is being planned by a Moscow urban design institute. The main thoroughfare out of Slavutych will lead directly to the Chernobyl' nuclear power plant 30 miles to the west.[33] Slavutych is to be built over the next two years and will house 30,000 people when completed.[34]

The construction of Slavutych may have been a response to public pressure. In an interview in *Pravda*, Chernobyl' station director, Erik Pozdyshev, said:

There is one problem that keeps cropping up. People ask: why is our accommodation allocated on a temporary basis? After all, we are permanent workers, why are our apartments and residence permits temporary? These questions have been raised at all meetings and in party groups and, quite honestly, I cannot come up with a logical response to this question. The point is that the housing for personnel is located in Kiev and Chernihiv and the temporary residence permits are also issued there. It is true that we will build a new city. A decision to this effect has been taken, but it is a matter for the future.[35]

Ten days later, the construction of Slavutych was announced.[36] The future, for once, came quickly for the residents of the northern Ukraine.

By mid-November, more information had been made available about the future of the area. Zelenyi Mys, it was revealed, would accommodate 5,000, not 10,000, shiftworkers or "energetics" of the nuclear plant. By November 13, about 1,000 workers were actually living there. However, the Ministry of Power, it was noted in the Ukrainian press, was not paying sufficient attention to the building work there. Some houses were heated, others were not.[37] Zelenyi Mys and Slavutych are to house the workers employed at the on-line units. But what of those workers building the fifth and sixth power units at Chernobyl'?

On November 6, the newspaper *Sotsialisticheskaya Industriya* revealed that the abandoned reactor town of Prypyat' is to have a future. This was confirmed in the Ukrainian press one week later. Prypyat' is to house the workers building the fifth and sixth units at Chernobyl'. Thus, the builders are to be separated from the power workers. Again, "shift-lodgings" will accommodate the men, but not their families.[38] There has been no indication about the future size of Pry-

[33] *Rabochaya gazeta* (Moscow), Oct. 26, 1986.
[34] Radio Moscow, Oct. 20, 1986.
[35] *Pravda*, Oct. 10, 1986.
[36] Radio Moscow, Oct. 20, 1986.
[37] *Robitnycha hazeta*, Nov. 18, 1986.
[38] Ibid.

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Housing for Chernobyl' plant workers nearing completion at Zelenyi Mys.

—TASS from Sovfoto.

pyat', the town built in the 1970's which was intended to house 200,000 at its peak, but which had a population of about 40,000 at the time of the nuclear accident. It is reported that Prypyat' "will be totally cleansed." In Chernobyl, on the other hand, 22 kilometers to the south, people no longer wear respirators outdoors because of the drop in the radiation level.

Energy Policy Repercussions

Finally, what has been the impact of the disaster on the Soviet nuclear industry and overall energy program? The rapid start-up of the first two Chernobyl' reactors in October suggests that the USSR faces an almost desperate situation in its energy sector, particularly with the onset of winter. But on the surface, there seems little reason for this. Nuclear power made up only about 11 percent of the Soviet Union's total electricity generation in 1985. Graphite-moderated stations like that of Chernobyl' constituted only 6 percent, while the Chernobyl' station itself—the largest in Ukraine, and along with Leningrad and Kursk, the largest in the USSR—approximately 1.5 percent. New 1,000-megawatt, VVER (pressurized-water) reactors were scheduled to come on-line in 1986 at Rivne (Rovno in Russian), Zaporizhya, Khmel'nytskyi and Kalinin. So why have so many recent editorials in newspapers such as *Pravda*, *Izvestiya*, and *Komsomolskaya Pravda* focused on the energy situation?

In the first place, one should emphasize that there are factors other than Chernobyl' that come into play, such as poor performances at thermal power plants and the low water levels in rivers after a dry 1986 summer. These have had an adverse effect on output at Soviet hydroelectric stations. In Vienna, the Soviets revealed that their plants with graphite-moderated reactors (RBMK's) had been shut down for technical improvements. An article in *Sotsialisticheskaya Industriya* in late September suggested that many were still out of operation.[39] Engineers and technical personnel of the nuclear energy industry had been transferred to Chernobyl' and to other RBMK's (Leningrad, Ignalina, Kursk, etc.) to ensure that improved safety features are installed. Skilled engineers had also been sent en masse to Chernobyl' to assist with the starting-up of reactors 1 and 2 there. In turn, this has slowed down work on existing pressurized-water reactors. Of the new reactors scheduled to come on line in 1986 only three did so (see the article by Judith Thornton).

In October, Candidate Member of the Politburo Vladimir Dolgikh visited Zaporizhya station in Ukraine. He enumerated a host of problems encountered there with supply and construction work on the new 1,000-megawatt reactor, which was supposed to be operating by June 1986.[40] The problems outlined by Dolgikh are only too familiar at Soviet nuclear plants: what is different is that after Chernobyl' such problems are being taken much more seriously by the authorities. Understandably, the approach of the past, in which the main criterion was the rapidity of construction, has come into question.

Soviet nuclear installations, however, still suffer from a lack of skilled personnel, shoddy construction materials, chronic supply problems, and an outdated central planning system that has in fact been discarded at some enterprises—at the Sumy Machine-Tool Works,

[39] *Sotsialisticheskya Industriya* (Moscow), Sept. 30, 1986.

[40] The start-up of the new Zaporizhya reactor was announced in *Robitnycha hazeta*, Dec. 13, 1986. On Dolgikh's visit, see *Izvestiya*, Oct. 12, 1986.

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for example—in favor of a partly decentralized system based on local self-financing.

Chernobyl', which suffered from these problems roughly in proportion to its immense size, has been restarted, presumably because its reactors have been made safer. But the underlying dilemmas remain. They have been described most aptly by *Pravda*'s science correspondent, Vladimir Gubarev, who has recently written a play about the Chernobyl' disaster called *Sarcophagus*. Gubarev was a principal reporter of the disaster, and has a personal knowledge of the station's makeup and organization. Consequently, his dramatization is based on facts which can also be verified from other sources. What follows is a brief excerpt from the play as it appeared in the weekly *Sovetskaya kul'tura*.[41]

Monitor: Our machines came from a warehouse somewhere. They were sent to us rather than being written off. We coped as long as there wasn't an accident. We mended and made do.

Operator: The problem was we were always in a hurry; we pledged to have the reactor finished three months early, and in operation two days early. Yet, we asked four times for new dosimeters, but no one was in any hurry at the top. The builders rushed the whole thing through. Underneath the reactor you'll find hunks of concrete, a couple of mechanical diggers, and all for the sake of some sort of award. Who needs that sort of speed?

Procurator (to the General): It was your signature on the document accepting reactor No. 4, wasn't it?

General: Not only No. 4, all of them. I have worked here for fifteen years.

Procurator: Why did you sign the acceptance documents when the roof was made of the same material and you knew that it was forbidden to use that material in industrial objects?

General: I objected....I told the heads of the ministry.

Procurator: But you still signed? That sort of roof was banned twelve years ago. Why was it used?

Head: There was a lot of it in the warehouse. We had a deadline to meet.

General: If I had not signed, someone else would have done. Or do you only sign things you can sign with a clear conscience?

The play also focuses on the lack of protective clothing and the failure of the head of the power station to take appropriate action at the time of the disaster. The above excerpt is revealing with hindsight, but it is no more frank than Soviet reports of the past five to ten years, which have again and again focused on alarming reports from various nuclear power plants: the Odessa station was said to be in a state of "chaos" in late 1984, and again in 1986; the main pressurized-water reactor factory at Volgodonsk collapsed into its reservoir in 1983; Rivne station workers reportedly had to be treated for alcoholism early in 1986; Rostov station was found to possess defective materials; the computer system at Zaporizhya had to be replaced because of serious defects; the top officials at the Khmel'nytskyi station were purged in 1983 for embezzlement, theft, and various other transgressions that led to criminal proceedings.[42] The picture is clear: the situation at Soviet nuclear plants before Chernobyl' gave cause for serious concern, if not alarm.

What of the future? How is life in Ukraine after Chernobyl'? For the residents of Kiev oblast, the disaster has brought intense suffering. Over 30 people are dead and over 200,000 have been exposed to high levels of radiation. The effects of the cesium isotope are still being monitored, and the city of Kiev now has a reserve water supply from the Desna River, in addition to the Dnieper. Thousands were still living in camps, tents, and boats as winter approached. The clean-up campaign, which has entailed the efforts of thousands of Ukrainian, Baltic, and other workers, is being carried out in wretched conditions.

Two reactors at the Chernobyl' nuclear plant have been restarted, and *Radio Moscow* has announced that the third reactor is to be back on line by June 1987.[43] (Meanwhile, it is still not possible to approach the damaged unit, and remote-controlled vehicles are involved in most of the work in that area.) At the World Energy Conference in Cannes in October, Valeriy Legasov, deputy director of the Kurachatov Atomic Energy Institute of the Soviet Academy of Sciences, announced that the USSR is to increase its reliance on nuclear power for electricity production. The country had lost more farmland from the construction of hydroelectric dams, he declared, than from the Chernobyl' accident.[44]

On November 3, in Bucharest, Soviet Premier Nikolay Ryzhkov spoke at a session of the CEMA countries. He revealed that both the East European countries and the USSR planned to proceed with their massive programs for the expansion of nuclear energy. In Eastern Europe, the anticipated rise in capacity is from 8 to 50 million kilowatts, and in the USSR, an increase in capacity of 500–600 percent is forecast.[45] The latter is a slight reduction in the forecast annual rate of capacity growth from the current (1986–90) goal of 48 percent to around 40 percent, but it reveals that Soviet confidence in the industry has not been seriously affected by the Chernobyl' disaster. At least according to these early indications, Soviet confidence in the futfuture of the industry remains firm. Yet, although the Chernobyl' nuclear plant may be back in operation, the Chernobyl' disaster is not over.

[41] *Sovetskaya kul'tura* (Moscow), Sept. 13, 1986.
[42] Marples, op. cit., pp. 79–92.
[43] Radio Moscow, Oct. 1, 1986.
[44] Associated Press (New York), Oct. 9, 1986.
[45] *Pravda*, Nov. 4, 1986.

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Chernobyl' and *Glasnost'*

Ellen Jones and Benjamin L. Woodbury, II

On the night of August 31/September 1, 1983, Soviet interceptors shot down a South Korean commercial jet that had strayed into Soviet territory. When Western officials responded with accusations and condemnations, Soviet spokesman withdrew behind a curtain of silence and denial, followed by grudging acknowledgment and, finally, counterattack.[1] On September 9, then Chief of the General Staff Marshal Nikolay Ogarkov gave a televised press conference to present the Soviet side of the story.[2] The Soviets charged that the plane had been on an intelligence mission for the United States, and also accused the United States of trying to discredit the Soviet Union and undermine the chances of success at the arms limitation talks about to resume in Geneva.[3]

The Soviet handling of the KAL 007 incident, then, was reactive. Only under pressure of adverse international opinion did Soviet spokesmen admit that the Soviets had shot down an unarmed passenger airliner. But in making the admission, they also tried to shift responsibility for the incident from the Soviet Union to the United States.

Three years and two general secretaries later, unit No. 4 of the Chernobyl' nuclear power plant exploded. For party decision-makers in Moscow, the accident raised the immediate issue of how to deal with the news, both at home and abroad. Like the shooting down of KAL 007, the disaster was an international incident because the emitted radioactivity affected the USSR's neighbors. But unlike KAL 007, Chernobyl' was also a domestic issue, because it threatened Soviet lives and property, affected popular perceptions of the new Gorbachëv leadership, and modified elite assessments of Gorbachëv's power. The accident at Chernobyl' also offers a rare glimpse at the political and social impact of technological disasters in a socialist state. The reaction of the Soviet population to the accident and its aftermath tells us a lot about the role of both public opinion and the news media in the USSR. It also provides some insight into the changes introduced by General Secretary Gorbachëv and the limits of those changes.

This article explores the political and social aspects of the accident. It begins with an examination of Gorbachëv's public relations policy and its application to the Chernobyl' disaster. It then examines the implications of the accident for Soviet foreign policy and closes with an assessment of the domestic repercussions of the disaster.

The *Glasnost'* Policy

The accident at Chernobyl' came at a time when Gorbachëv was trying to change Soviet public relations policy. In the past, news of many events, particularly those thought to be embarrassing to the political

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[1]On September 2, 1983, a TASS statement acknowledging the disappearance of the Korean airliner appeared in major Soviet newspapers. A subsequent TASS statement, more detailed but still not admitting the Soviet role in the airliner's disappearance, appeared the following day. (See *Pravda* [Moscow], Sept. 2, 1983, and *Krasnaya Zvezda* [Moscow], Sept. 2 and 3, 1983.) Finally, on September 7, *Krasnaya Zvezda* published an account acknowledging that "the interceptor-fighter plane of the Anti-Air Defenses fulfilled the order of the command post to stop the flight." For Western coverage of Soviet reactions, see *Time* (New York), Sept. 12, 1983, pp. 10–18.

[2]*Pravda*, Sept. 10, 1983.

[3]See, e.g., "So When Will Washington Give Answers," ibid., Sept. 25, 1983.

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leadership, had been suppressed. This was true of natural disasters, like earthquakes or floods, and of man-made disasters, like industrial or transportation accidents. The Soviets had also been censoring coverage of negative social trends, such as an increase in infant mortality.[4] Soviet efforts to suppress news had also extended to international events, as the KAL 007 incident demonstrated. The usual pattern was silence, followed by evasion. Only when the diplomatic costs of this strategy mounted, did Soviet officials try to reduce them by a public relations counterattack. Soviet handling of the military involvement in Afghanistan followed this pattern, although in that case the shift from initial news suppression to fuller reporting appears to have been prompted more by domestic than by diplomatic considerations.

The policy of suppressing negative news has had some deleterious side effects, both at home and abroad. At home, it contributed to a widespread mistrust of the domestic media, inclining many Soviet citizens to turn to alternative sources of information available from the West, in particular to foreign radio broadcasts. The controlled nature of the official media also heightened the importance of private communication, especially by word of mouth.[5] There were also foreign policy costs. Suppression of information reinforced the image of the Soviet Union as a defensive totalitarian regime. This, in turn, undercut Soviet efforts to foster an image of openness and reasonableness—an image necessary for the recurrent Soviet strategy of exploiting divisions between Western Europe and the United States.

To counter such domestic and international quandaries, Gorbachëv proclaimed a policy of *glasnost'*—openness. This has translated into fuller reporting of "negative" news at home and more sophisticated public relations campaigns abroad. In writing for the domestic media, Soviet newsmen have at times begun to act like Western investigative reporters by running stories about mismanagement and corruption. *Glasnost'* has also affected the way in which Soviet officials and analysts can publicly advocate policy changes. There have always been opportunities to express differences over policy on selected issues in the post-Stalinist period. The new information policy, however, appears to have significantly widened the acceptable range of alternative policies that can be debated publicly. In cultural life, too, a much wider range of subjects, including some that are politically sensitive, is tolerated in film and literature. *Glasnost'* also means that social problems can be discussed more openly. The televised admission by Minister of Internal Affairs Aleksandr Vlasov that the Soviet Union has a drug problem is a case in point.[6] *Glasnost'* has also led to fuller and more timely reporting on natural disasters.[7] It has allowed for expanded (although still censored) coverage of Soviet military activities in Afghanistan, including the first showing on television of Soviet troops in combat.[8]

With regard to international audiences, *glasnost'* has meant expanded use of press conferences at which Soviet spokesmen have adopted a more informative and forthcoming manner in presenting Soviet foreign policy positions.[9] Gorbachëv himself has utilized press conferences extensively, both inside and outside the USSR, to publicize his arms control initiatives.[10] The Soviets also made special efforts to publicize the 27th CPSU Congress to foreign audiences.[11]

In short, *glasnost'* has changed the look and feel of Soviet public behavior in a variety of ways. The policy of *glasnost'* represents a judgment by a part of the political elite that heavy-handed censorship is not always the most effective way to mold public opinion in the USSR, that leadership goals can sometimes be better served by more open public discussion and sophisticated presentation rather than by suppression of the news. It also reflects an effort to reduce the influence of information from foreign sources in the USSR, such as that of foreign radio broadcasts.

This shift in public relations policy reflects the kinds of changes introduced since Gorbachëv became general secretary. Although Gorbachëv has described his domestic programs as a "revolutionary transformation,"[12] most of the changes carried out are fairly

[4]The Soviets have again resumed giving infant mortality data in standard statistical sources after a 10-year lapse. This may be due partly to Gorbachëv's *glasnost'* policy and partly to the fact that reported data, which apparently peaked in 1975 at 30.8 deaths per 1,000 births, have declined to a less embarrassing level—26 per 1,000. See *Ekonomicheskaya Gazeta* (Moscow), No. 43, 1986, pp. 6–7; and *Narodnoye khozyaystvo SSSR v 1985 g. Statisticheskiy yezhegodnik* (The National Economy of the USSR in 1985—Statistical Yearbook), Moscow, Finansy i Statistika, 1986, p. 547.

[5]Gayle Durham Hollander, *Soviet Political Indoctrination: Developments in Mass Media and Propaganda Since Stalin*, New York, Praeger, 1972, pp. 113–17, 181–83.

[6]Moscow Television Service in Russian, 1530 GMT, Nov. 10, 1986.

[7]See, e.g., "No Grounds for Rumor," *Sovetskaya Rossiya* (Moscow), Jan. 5, 1986.

[8]Moscow Television Service in Russian, 1430 GMT, July 11, 1985.

[9]See, e.g., the televised interview with Col. Gen. Nikolay Chervov on Berlin ARD Television Network in German 2200 GMT, Feb. 12, 1986, trans. in Foreign Broadcast Information Service, *Daily Report: Soviet Union* (Washington, DC—hereafter *FBIS-SOV*), Feb. 14, 1986, pp. AA/2–8.

[10]See the series of press conferences held to promote Gorbachëv's arms control statement of Jan. 15, 1986, trans. in *FBIS-SOV*, Feb. 13, 1986, pp. AA/2–5, Feb. 18, 1986, pp. AA/4–5, and Feb. 21, 1986, p. A/2.

[11]See *FBIS-SOV*, Mar. 3, 1986, pp. CC/3–4.

[12]*Pravda*, Feb. 26, 1986.

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A. Krutov, a reporter for Moscow Television's "Vremya" program, interviews Soviet officials on May 10, 1986, in Kiev regarding the Chernobyl' accident. From left to right are: Vitaliy Masol, Vice-Chairman of the Ukrainian SSR Council of Ministers and Chairman of the republic's State Planning Commission; Krutov; Ivan Silayev, Vice-Chairman of the USSR Council of Ministers; Valeriy Legasov, member of the Presidium of the USSR Academy of Sciences; Yuriy Izrael', Chairman of the USSR State Committee on Hydrometereology and Environmental Control; and Yevgeniy Velikhov, Vice-President of the USSR Academy of Sciences.

—TASS from Sovfoto.

modest variations on old themes. This is especially true in foreign policy where most of the innovations are more stylistic than substantive. It is important to note, however, that for the Soviet political elite, these changes are still controversial. *Glasnost'* may seem like a cosmetic change—after all, Soviet authorities are not giving up control of the domestic media—but it has encountered resistance nonetheless.

Resistance to *glasnost'* could already be seen in leadership speeches at the 27th CPSU Congress. Gorbachëv, in his Central Committee political report (a document that reflects not only his personal policy preferences but also the collective position of the political elite), defended *glasnost'* vigorously, although he noted that there were those who "do indeed feel uncomfortable in the light of publicity."[13] The party's "second" secretary, Yegor Ligachëv, however, was less enthusiastic about *glasnost'*: in his Congress address, he criticized the party newspaper *Pravda* for "lapses" in its reporting on improprieties—an apparent reference to *Pravda*'s earlier publication of a letter critical of elite privileges.[14] In April 1986, Gorbachëv obliquely referred to the opposition to *glasnost'* during his address to the Socialist Unity Party Congress in East Germany, noting that there were some who felt criticism had "gone too far."[15]

The resistance to *glasnost'* is symptomatic of the general inertia that has impeded implementation of many of the new leadership's domestic policies. Efforts to streamline the planning and management process, for example, have been met with widespread bureaucratic resistance—something that Gorbachëv himself has complained of repeatedly.[16] In short, Gor-

[13]Ibid.

[14]Ibid., Feb. 28, 1986.

[15]*Ibid.*, Apr. 19, 1986.

[16]See, e.g., Gorbachëv's speech to the Khabarovsk Kray party organization on July 31, 1986, reported in *Izvestiya* (Moscow), Aug. 3, 1986.

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bachëv may have made excellent progress in bringing about a massive turnover in personnel, but this has not necessarily translated into an ability to easily or quickly carry through domestic changes.

Glasnost' and Chernobyl'

The initial Soviet response to the Chernobyl' disaster is a case in point. It was a reversion to the traditional Soviet way of handling embarrassing news—an information blackout was attempted. Soviet officials later claimed that this initial silence was due to the lack of information and uncertainty over the scope of the accident rather than to any reluctance to report on a disaster.[17] But the chronology of Chernobyl' suggests otherwise. To be sure, there may have been initial confusion about how serious the accident was. There may also have been some delay in providing a detailed report to political leaders in Moscow. However, there was still a substantial gap between the time the leaders knew that the accident had serious ramifications and the time they chose to make a public announcement about it. Moreover, even after the Soviet leadership had gotten its public relations campaign geared up, there were still major discrepancies between the story the Soviet media were telling and what was actually happening in Chernobyl'. Thus, Chernobyl' demonstrated that *glasnost'* means a more sophisticated public relations approach rather than more truthful reporting of the news.

The accident at unit No. 4 of the Chernobyl' atomic power station happened with little warning. According to the Soviet report on the accident to the International Atomic Energy Agency, plant operators were conducting a scheduled experiment that involved reducing reactor power.[18] Tests of this sort had been performed at Chernobyl' No. 4 previously, in 1982 and 1984. This time, however, the experiment went awry. In their zeal to complete the test, plant operators overrode safety protection systems and committed a series of six major safety violations that led to disaster. At 1:23 am on Saturday, April 26, explosions occurred in Chernobyl' No. 4, followed by fire and extensive damage to the reactor and reactor core. This resulted in high-level radioactive releases. According to Valentin Falin, head of the Soviet news agency Novosti, Gorbachëv was informed of the accident on that same day.[19] Gorbachëv himself stated later that an investigative commission was appointed immediately and sent to the scene of the accident to study the causes of the accident and carry out emergency measures. A working group was also formed in the Politburo under Chairman of the USSR Council of Ministers Nikolay Ryzhkov.[20] On Sunday, April 27, evacuation of the population within a 30-kilometer radius of the power plant was begun.[21]

The fact that the Soviet political leadership decided—apparently Saturday or early Sunday—on a major evacuation would indicate that it was fully aware of the scope of the Chernobyl' accident by that time. An official Soviet statement on the accident, however, did not come out until Monday, April 28, two days after the accident and many hours after Sweden had detected the radiation. Again according to Falin, it was not until Monday that party chief Gorbachëv got the first detailed report on the extent of the accident. Later on that day, the Politburo met to discuss the report of the investigating commission.[22] Even later on April 28, the Council of Ministers released the first Soviet public acknowledgment of the accident. The brief announcement stated only that an accident had happened and that measures were being taken to deal with it.[23]

This low-key coverage continued over the next several days. On Tuesday, April 29, the Council of Ministers released another announcement containing few new details of the accident.[24] This second release noted that two persons had been killed during the accident, but said that the situation had been stabilized (a claim that the Soviets themselves later contradicted) and noted that evacuation of nearby residents had already taken place.

[17]See the comments by Georgiy Arbatov, Director of the USA-Canada Institute, on London BBC, World Service in English, 1110 GMT, May 4, 1986. See also the interview with Moscow party chief Boris Yel'tsin in *Stern* (Hamburg), May 7, 1986, p. 245.

[18]USSR State Committee for Utilization of Atomic Energy, *The Accident at the Chernobyl' Nuclear Power Plant and Its Consequences.* Information Compiled for the IAEA Experts' Meeting, August 25–29, 1986. Vienna. Part I. General Material. Draft, pp. 15–17. See also "Chernobyl: The Soviet Report," *Nuclear News* (LaGrange Park, IL), Sept. 11, 1986, pp. 1–8.

[19]Falin's comments appeared in an interview in *Der Spiegel* (Hamburg), May 12, 1986, pp. 139–43. They were summarized by Paris AFP in English, 1252 GMT, May 11, 1986.

[20]These details were provided by Gorbachëv in his first public statement on the accident, at a May 14 press conference, reported in *Pravda*, May 15, 1986. See also *The Accident at the Chernobyl' Nuclear Power Plant*, op. cit., p. 2.

[21]The head of the government commission investigating the accident stated later that the evacuation was conducted via buses on Sunday, April 27, from 1400 to 1620 pm. Moscow TV Service in Russian, 1755 GMT, May 6, 1986. See also *Pravda*, May 6, 1986.

[22]*Der Spiegel*, May 12, 1986, pp. 139–43.

[23]Moscow TASS in English, 1717 GMT, Apr. 28, 1986, in *FBIS-SOV*, Apr. 29, 1986, p. R/1.

[24]Moscow TASS in English, 1706 GMT, Apr. 29, 1986. The statement was published in major Soviet newspapers on the following day. See, e.g., *Krasnaya Zvezda*, Apr. 30, 1986.

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More reassuring remarks appeared in a Council of Ministers release on Wednesday, April 30. The release announced that radiation levels were decreasing and that decontamination work had begun.[25] It also refuted rumors published by Western news agencies that thousands of people had died in the accident. The Soviet media began what turned out to be a long series of articles condemning the West for exaggerating the seriousness of the accident and accusing the United States and the West of capitalizing on the accident to divert world public opinion from recent US military actions against Libya.[26] Soviet television also released a still photo of the damaged reactor.

This effort to suppress information about Chernobyl' provoked a storm of criticism in the West. It was also playing poorly at home. Many Soviet citizens were apparently very skeptical of the reassuring Soviet statements about the accident. Meanwhile, Western news coverage of Chernobyl' was reaching the Soviet public through contacts with friends and relatives abroad and foreign radio broadcasts—including the stories about a death toll in the thousands.[27] Thus, Soviet citizens with access to outside sources of news were hearing an account of the Chernobyl' situation that contrasted sharply with the official Soviet version. The minimal coverage was also contributing to rumors and public anxiety in areas near the accident— something that the Soviets subsequently acknowledged. One Soviet commentator noted that an important lesson of Chernobyl' was the need for honest, frank information.[28]

In response to these problems, the Soviet leadership decided to provide more extensive—although still heavily censored—coverage of the accident, but continued to play down its seriousness. A Council of Ministers statement on May 1 insisted that radioactivity was continuing to decrease.[29] Soviet television coverage of May Day festivities in Kiev and Moscow showed the usual line-ups of party leaders.

But on May 2, the Soviets moved a bit further away from traditional Soviet treatment of disasters by publicizing a visit to Chernobyl' by Ryzhkov and Ligachëv.[30] The two party leaders toured the Chernobyl' area, met with members of the government commission investigating the accident, and visited the evacuees. At the same time, the Soviet spokesmen and media stepped up their attacks on the treatment of the accident in the West.

On May 4, a spokesman for the International Atomic Energy Agency (IAEA) announced that the Soviets had invited its director, Hans Blix, to come to Moscow.[31] This move was obviously intended to counter Western complaints that the Soviets were holding back on Chernobyl'. A government communiqué issued on May 5 noted that the radiation danger in Ukraine and Belorussia was stabilizing and that dikes were being placed on the Prypyat' River to prevent contamination of water supplies.[32]

On May 6, the Soviet media counteroffensive regarding the accident went into high gear. There was a press conference at the Foreign Ministry press center featuring Boris Shcherbina, chairman of the government commission investigating the accident.[33] Again, the intention was to counteract Western charges that the Soviet leadership was being less than forthcoming on Chernobyl'. At the same time, Soviet domestic media began providing fuller coverage of the Chernobyl' events. The Soviet press published an account of the accident that highlighted the human-interest angle of the story.[34] Soviet accounts over the next several days continued to level sharp criticism at Western "scare stories" and implied that these stories were part of an anti-Soviet campaign.[35] They also pointed out that Soviet authorities were committed to providing the Soviet public and the entire world with extensive information on the accident, as the May 6 press conference had shown.[36]

During this period, Soviet authorities continually assured their own population as well as the West that

[25]Moscow TASS in English, 1713 GMT, Apr. 30, 1986; also *Krasnaya Zvezda*, May 1, 1986.

[26]See, e.g., V. Bolshakov, "Senseless Zeal," *Pravda*, Apr. 30, 1986.

[27]On Soviet awareness of this spread of information, see the April 30 communiqué of the USSR Council of Ministers, loc. cit. Further evidence that Soviet authorities were aware that Western news coverage of Chernobyl' was seeping into the USSR comes from an interview with *Literaturnaya Gazeta* political observer Fëdor Burlatskiy in *Yomiuri Shimbun* (Tokyo), June 6, 1986. See also, Radio Liberty, Soviet Area Audience and Opinion Research, "The Chernobyl' Disaster and Western Radio Listening: Initial Findings," Munich, RM4-86, June 1986.

[28]Moscow Television Service in Russian, 0625 GMT, June 13, 1986. Additional evidence regarding the impact of conflicting information on the development of rumors is found in Radio Liberty, Soviet Area Audience and Opinion Research, "The Chernobyl Disaster: Sources of Information and Reactions," Munich, AR 4-86, October 1986.

[29]Moscow TASS International Service in Russian, 1123 GMT, May 1, 1986, trans. in *FBIS-SOV*, May 1, 1986, p. R/1; also *Pravda*, May 2, 1986.

[30]Moscow World Service in English, 1500 GMT, May 3, 1986. The May 2 visit was reported on the evening news program "Vremya," on May 3.

[31]Paris AFP in English, 1504 GMT, May 4, 1986.

[32]Moscow Domestic Service in Russian, 1527 GMT, May 5, 1986.

[33]Moscow Television Service in Russian, 1755 GMT, May 6, 1986.

[34]V. Gubarev and M. Odinets, "The Station and Around It," *Pravda*, May 6, 1986.

[35]Yuriy Zhukov, "Accidentally Dropping the Mask: Who Is Fueling the Ballyhoo and Why," ibid.; A. Mozgovoy, "Shamelessness," *Sovetskaya Rossiya*, May 6, 1986; and A. Shalnev, "Custom-Made Slander," *Sovetskaya Kul'tura* (Moscow), May 6, 1986, p. 22.

[36]"Concerning Events at the Chernobyl' AES. In the USSR Foreign Ministry Press Center," *Krasnaya Zvezda*, May 7, 1986.

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Officials of the International Atomic Energy Agency (IAEA) at a May 9, 1986, Moscow press conference regarding the Chernobyl' disaster and its consequences: at right, IAEA Director-General Hans Blix; at left, Maurice Rosen, director of the IAEA safety division.

—TASS from Sovfoto.

clean-up efforts were proceeding smoothly at Chernobyl'. An announcement by the Council of Ministers on May 7 said that radiation was continuing to fall and decontamination in the area around the station was nearly completed.[37] The media were writing that life in Kiev was normal. The upbeat coverage continued over the next several days. The Politburo reportedly commended the efficient work of those involved in clean-up operations and authorized a series of measures to provide financial assistance to evacuees.[38]

Soviet authorities also organized a tour of the Kiev area for foreign journalists, who were briefed on the Chernobyl' situation by Ukrainian officials.[39] The Soviet leadership obviously was calculating that the carefully controlled visit would result in less sensationalism in Western coverage of the event. These calculations were on the whole correct. For the most part, Western reports on the Kiev visit portrayed residents as uncertain and worried, but not panicked.[40] The Soviets were hoping of course that this news would filter back into the Soviet Union through foreign radio broadcasts and reinforce the official Soviet version of the events.

By May 9, Soviet reporters were conceding that some Kievans were concerned about the accident.[41] Ukrainian authorities announced plans to send Kiev's school children to holiday camp early as a precaution against possible radiation exposure. Local television warned Kiev residents against consuming fresh milk and vegetables and recommended other steps as additional preventive measures.[42]

Soviet spokesmen were still insisting that everything was under control. Soviet media highlighted the news conference held by IAEA Chairman Hans Blix,[43] and continued to run inspirational human-interest stories on Chernobyl', including a story based on an interview with an injured fireman.[44]

On May 11, there came the first indication in the Soviet press that a second crisis at Chernobyl' had been barely averted. The standard government announcement was predictably upbeat.[45] However, dur-

[37]Moscow TASS in English, 1726 GMT, May 7, 1986; also *Krasnaya Zvezda*, May 8, 1986.

[38]*Izvestiya*, May 10, 1986.

[39]V. Gubarev and M. Odinets, "From Chernobyl' to Kiev: Our Special Correspondents Tell of a Meeting at the Ukrainian Council of Ministers," *Pravda*, May 10, 1986; Andrey Illesh, "Situation Normalizing—Meeting with Journalists in Kiev," *Izvestiya*, May 10, 1986; and Moscow TASS in English, 1533 GMT, May 9, 1986.

[40]See, e.g., Paris AFP in English, 0742 GMT, May 9, 1986.

[41]V. Gubarev and M. Odinets, "Spring of Alarm and Courage," *Pravda*, May 9, 1986.

[42]See, Paris AFP in English, 0742 and 0807 GMT, May 9, 1986.

[43]Moscow Television Service in Russian, 1430 GMT, May 9, 1986.

[44]G. Alimov, "Fulfilling His Duty," *Izvestiya*, May 10, 1986.

[45]Moscow TASS in English, 1714 GMT, May 11, 1986.

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Foreign newsmen film a dosimetric check at a post in Markariv district, to which many people from the Chernobyl' area were evacuated.

—TASS from Sovfoto.

ing a televised interview, Deputy Chairman of the USSR Council of Ministers Ivan Silayev stated that "the situation currently does not pose a major threat, *which was feared.*"[46] Despite this admission, much of the press coverage was dedicated to continuing complaints about Western criticism of the Soviet handling of the accident, as well as bitterness about a decision by the European Economic Community to ban food imports from Eastern Europe.[47]

On May 14, over two weeks after the reactor exploded, party chief Gorbachëv went on nationwide television to speak about the accident.[48] His talk was designed to repair the foreign policy damage caused by early Soviet silence on the accident, to shore up his own image at home by presenting himself as a strong and effective leader during the crisis, to convey the Soviet party leadership's concern for public safety, and to reassure both domestic and foreign audiences that the situation was under control and steps were being taken to preclude a repetition of the disaster. As with earlier Soviet media treatment of the accident, a key component of Gorbachëv's speech was the effort to shift public attention from Soviet behavior to the exaggeration by the Western press of the hazards resulting from the accident. Gorbachëv's address laid the groundwork for the Soviet public relations campaign in the following weeks and months.

As this review of the Chernobyl' chronology makes clear, the initial Soviet response to the reactor explosion closely followed the KAL 007 pattern. No information was provided until international pressure made the Soviets realize that silence was counterproductive. As with KAL, the early Soviet announcements were minimal and deliberately misleading: Soviet authorities were insisting that the situation was under control when, as they later admitted, a second disaster was threatening. Also, the reaction to Western criticism of

[46]Emphasis added. Silayev's comments were broadcast on "Vremya," Moscow Television Service in Russian, 1430 GMT, May 11, 1986. See also Moscow Domestic Service in Russian, 1330 GMT, May 11, 1986; and *Izvestiya*, May 12, 1986. *Pravda* later acknowledged that "Ten days after the accident there was still the threat that it could escalate." See V. Gubarev and M. Odinets, "New Stage in the Work," *Pravda*, May 13, 1986.

[47]V. Bolshakov, "Warming Their Hands," *Pravda*, May 13, 1986.

[48]*Pravda*, May 15, 1986.

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Soviet behavior was to attack the West: in the KAL case, for allegedly sending the plane on a spy mission in the first place; in the Chernobyl' case, for exaggerating the scope of the accident and engaging in anti-Soviet slander.

However, there were also some important differences between the handling of KAL and Chernobyl'. Once the public relations campaign on Chernobyl' got under way, it bore the imprint of Gorbachëv's *glasnost'* policy, with multiple press conferences; tours for foreign newsmen; interviews with officials, victims, and helpers; dramatic human-interest stories; and visible attention from top party leaders. To be sure, some of these differences can be attributed to the nature of the Chernobyl' accident itself—large numbers of Soviet citizens were affected by it and its aftermath. Nevertheless, these actions represented a concerted, if belated, attempt to apply the *glasnost'* policy to a technological disaster. Future handling of events of this nature will depend to a significant degree on how successful the Soviet leadership judges *glasnost'* to have been in containing the negative public relations consequences from the Chernobyl' disaster.

Foreign Policy Consequences

In the foreign policy realm, consequences are likely to be both limited and, for the most part, temporary. In the short term, the Chernobyl' accident almost certainly increased frictions between the Soviet Union and its Warsaw Pact allies. The accident put East European leaders in a difficult position. On the one hand, they had to reassure their citizens and protect them against the consequences of radioactive contamination. On the other, they clearly did not want to criticize the Soviets or raise questions about their own civilian nuclear programs. In general, the public responses of the Warsaw Pact governments closely followed the Soviet strategy.[49] Most regimes played down the seriousness of the accident and condemned the West for exploiting the accident for political purposes. Media reporting was aimed at allaying public fears by assuring the population that the radiation was being continuously monitored and that it presented a minimal threat to public health. The one exception was Poland, where the government created an emergency panel to coordinate preventive measures and where children under 16 were given iodine preparations as protection against radiation effects.[50] In terms of popular reactions, Chernobyl' no doubt increased the already strong anti-Soviet sentiments among East Europeans.

In the long term, however, the accident and its aftermath seems unlikely to have a major political impact on the Soviet Union's relations with its East European allies. While some East European officials may resent the Soviets' failure to provide them with timely and accurate information about the accident, East European leaders have their own interests—chief among which is remaining in power—which would not be served by aggravating the Soviets unduly.

Outside of the Warsaw Pact, the Chernobyl' accident represents at least a temporary setback for Soviet public diplomacy. Since Gorbachëv became general secretary, he has worked hard to project an image of reasonableness, which is an integral part of his arms control strategy. Gorbachëv has tried especially to appeal to European audiences, so that Europe might pressure the United States to be more receptive to Soviet arms proposals. The initial Soviet silence on Chernobyl' undercut this strategy by underlining the USSR's continued commitment to secrecy. The initial news blackout also strengthened those in the West who argue that the USSR cannot be trusted.

A measure of how seriously Moscow has taken this public relations setback is the level of effort devoted to countering the negative international reaction. Top-level Soviet officials involved in the Chernobyl' cleanup continued to hold briefings on the accident throughout the summer.[51] The Soviets also made a determined—and quite successful—effort to appear forthright in their report to the IAEA meeting in August.

In addition, Gorbachëv has attempted to use the accident to give new impetus to his arms control proposals. During his May 14 address, for example, he pointed out that Chernobyl' demonstrated how dangerous nuclear weapons are, linking these remarks to an extension of the unilateral Soviet moratorium on nuclear tests. Gorbachëv's August announcement of another extension of the moratorium was repeatedly linked in the Soviet media with the Chernobyl' disaster, which was described as a pale reflection of the devastation that a nuclear war would bring. This effort, while not completely successful, has probably helped Gor-

[49]Most initial media reports in Eastern Europe were simply translations of the official Soviet announcements. See, e.g., Bucharest Domestic Service in Romanian, 1900 GMT, Apr. 29, 1986; Prague Domestic Service in Czech and Slovak, 1741 GMT, Apr. 29, 1986; *Népszabadság* (Budapest), Apr. 30, 1986; and Prague Domestic Service in Czech, 0700 GMT, May 4, 1986.

[50]Warsaw Television Service in Polish, 1730 GMT, Apr. 29, 1986.

[51]Press conferences designed to mold Western reports on the Chernobyl' issue were held in the Foreign Ministry's press center. See, e.g., *Kazakhstanskaya Pravda* (Alma Ata), May 29, 1986; Moscow Television Service in Russian, 1845 GMT, Aug. 21, 1986; *Krasnaya Zvezda*, June 7, 1986; and Moscow Television Service in Russian, 1748 GMT, Sept. 20, 1986.

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bachëv to defuse the negative public relations fallout from Chernobyl'.

Domestic Implications

The Chernobyl' accident has given Western observers a rare opportunity to see how a socialist regime copes with disaster. Soviet officials have made much of the courage and solidarity displayed by the people of the Soviet Union in reaction to Chernobyl'. In fact, the human response to Chernobyl' mirrored behavior during disasters in other national settings. For example, Soviet media claim that the evacuation of the surrounding communities went fairly smoothly; people were alarmed and anxious, but there was little panic.[52] Studies of evacuations in other countries suggest that this response is a typical one; despite popular images of mass hysteria, disaster victims rarely panic.[53] Some Chernobyl' victims, in particular the elderly and those separated from other family members, did resist the evacuation order.[54] This again follows patterns observed in Western studies of evacuation.[55]

Chernobyl' was also typical in that lack of information contributed to rumors. In the case of Chernobyl', wild rumors began circulating almost immediately after the accident was publicized. Many of the rumors incorporated two popular myths about disasters: that they invariably produce panic and result in widespread looting. For example, there were rumors that everyone who could run was fleeing Chernobyl' in panic, that there were bodies lying in the road, and that there was mass looting of stores and homes.[56] Lack of information, contradictory information, and little public trust in Soviet authorities, also contributed to anxiety. Again, this is hardly unique to the USSR.

In the Chernobyl' case, contradictory messages, together with the early official silence led to persistent public anxiety.[57] Residents throughout Ukraine and Belorussia were understandably worried about possible contamination of food supplies. A rumor touting the medicinal qualities of vodka as a cure for radiation was vigorously refuted by Soviet authorities. There were rumors that the waters of the Dnieper had been contaminated by radioactive dust. Kiev residents worried that the area was not safe for school children returning from summer camp. There were also stories circulating in the fall that the damaged reactor was still discharging radiation.[58] Soviet authorities now openly concede that most of these rumors, and the resulting popular resentment, were preventable through a more open information policy.[59] Indeed, the revised public information policy on Chernobyl'—qualified openness coupled with a public relations offensive—seems to have proven fairly effective both in calming public fears and defusing criticism of Soviet authorities.

Interestingly, the Soviet strategy of attacking the West for exaggerating the seriousness of the accident also appears to have worked fairly well. While some segments of the Soviet populace remain skeptical of Soviet coverage of the accident and its aftermath, many Soviets internalized the official media's outrage at Western "exploitation" of the tragedy, agreeing that Western governments, through the news media, were slandering the USSR.[60] This reaction is related, of course, to the fact that many Soviet citizens think that the media in the West are government-controlled.

The massive outpouring of sympathy and help for

[52]A. Sokol, "To Work, to the Reactors," *Pravda Ukrainy* (Kiev), May 8, 1986; Vladimir Itkin and Lev Chernenko, "A Battle with No Front Line," *Sovetskaya Rossiya*, May 9, 1986; and A. Grakhovskiy, "Reserves of Resilience," *Trud* (Moscow), June 11, 1986.

[53]See Thomas E. Drabek, *Human System Responses to Disaster: An Inventory of Sociological Findings*, New York, Springer Verlag, 1986, pp. 120–21, 123–24, 136, 138.

[54]Vladimir Zhukovskiy, Vladimir Itkin, and Lev Chernenko, "The Alarms and Hopes of Chernobyl'," *Sovetskaya Rossiya*, May 8, 1986; and *Komsomolskaya Pravda* (Moscow), May 11, 1986.

[55]The Chernobyl' evacuation contrasted with most evacuations in the United States in both the mode of transportation and the destination of evacuees. While most evacuations in the West are by private vehicle, evacuation from the Chernobyl' area was by bus. Moreover, in most Western countries, disaster victims relocate with friends and relatives, with the remainder going to public shelters. The Chernobyl' evacuation, by contrast, placed the evacuees with individual families, generally complete strangers, in villages outside the danger zone. On the Soviet evacuations, see N. Matukovskiy, "Rallying Round," *Izvestiya*, May 20, 1986. On Western experiences, see Robert A. Stallings, "Evacuation Behavior at Three Mile Island," *Mass Emergencies and Disasters* (Uppsala, Sweden), Vol 2, No. 1, March 1984, pp. 11–39; and Drabek, op. cit., pp. 109, 125–26.

[56]Radio Liberty, AR 4-86, pp. 9–10; and V. Itkin, O. Moskovskiy, and L. Chernenko, "Patrolling the Danger Zone," *Sovetskaya Rossiya*, June 10, 1986. On Western experiences, see, Dennis E. Wenger, "A Few Empirical Observations Concerning the Relationship between the Mass Media and Disaster Knowledge: A Research Report," in *Disasters and Mass Media. Proceedings of the Committee on Disasters and the Mass Media Workshop, February 1979*. Washington, DC, National Academy of Sciences, 1980, pp. 241–62.

[57]*Sovetskaya Rossiya*, May 16, 1986; N. Baklanov, "Around the Market with a Radiation Meter," *Izvestiya*, June 24, 1986; and "Alcoholism and Radiation," *Pravda Ukrainy*, July 5, 1986.

[58]N. Baklanov and A. Pralnikov, "Project in the Danger Zone," *Izvestiya*, Sept. 7, 1986; Moscow Domestic Service, 1315 GMT, May 14, 1986.

[59]See, e.g., *Pravda Ukrainy*, Sept. 26, 1986; O. Gusev and A. Pokrovskiy, "Four Months Later," *Pravda*, Sept. 2, 1986; and *Sotsialisticheskaya Industriya* (Moscow), June 10, 1986.

[60]See, e.g., interviews with Kiev residents broadcast on "Vremya," Moscow Television Service in Russian, 1700 GMT, May 5, 1986, in *FBIS-SOV*, May 6, 1986, pp. R/5–6. Additional evidence of the effectiveness of the Soviet attack on Western news media for exaggerating the scope of the accident is provided in Radio Liberty AR 4-86.

Significant portions of the public in the United States are also distrustful of media coverage of disasters, but (unlike Soviet audiences, which suspect the media of *downplaying* disasters), US audiences see the media as having a tendency to *exaggerate* them. See Drabek, op. cit., p. 166.

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Yekaterina Derkonos, third from right, a worker in a household wares factory in Obukhiv, Kiev Oblast, with members of three families evacuated from the 30-kilometer zone around Chernobyl' whom she accommodated in her home.

—TASS from Sovfoto.

Chernobyl's victims is another typical human response to disaster. Soviet media in the weeks after the reactor explosion featured many stories of bus drivers who volunteered for evacuation duty, physicians who demanded to help, and families outside the danger zone who clamored for a chance to take in evacuees. Much was made of the many contributions to the special fund established for Chernobyl' victims.[61] Though some of this generosity was undoubtedly due to official pressure, much of it was genuine. Disasters in most national settings typically provoke a massive helping response from non-victims. Moreover, communities struck by disaster often experience heightened levels of internal solidarity and intolerance for outsiders.[62] Soviet authorities were capitalizing on this phenomenon when they highlighted inaccuracies in Western reporting and so diverted popular attention from the failure of Soviet officials to provide accurate information to their citizens.

Solidarity in response to disaster, however, is often followed by a negative reaction as victims, anxious to resume a normal life, lash out at those who are helping them. Chernobyl' victims apparently went through a similar stage. Some protested about the quality of medical care; others, that their pensions were not being transferred to their new residence. Relatives complained that they were unable to locate evacuees. Many of the evacuees were anxious to go home and responded negatively to the news that an early return to some places was impossible.[63]

The leadership responded in several ways. First, it announced a series of measures to compensate victims for material losses and provide replacement homes.[64] Second, responding to what is apparently a

[61]See *Krasnaya Zvezda*, May 13 and June 29, 1986; and *Izvestiya*, Aug. 10, 1986.

[62]Drabek, op. cit., pp. 142–44, 179–80, 182.

[63]A. Pokrovskiy, "Friends' Dependable Shoulders," *Pravda*, July 5, 1986; G. Krasnoperov, "How People Have Settled Down in Their New Location," *Sel'skaya Zhizn'* (Moscow), June 6, 1986; and Nikolay Balonev and Andrey Illesh, "The Ispolkom's Concerns," *Izvestiya*, June 13, 1986.

[64]V. Fomenko, "Civil Dignity—The Echo of Chernobyl'," *Pravda Ukrainy*, Oct. 31, 1986.

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common need after disasters, the party leadership provided scapegoats by punishing selected officials. The government commission investigating the accident laid the blame squarely on human error.[65] Several low-level officials were summarily sacked for failing to be sufficiently solicitous of evacuee needs, others for fleeing with their families instead of staying on the job.[66] Several Moscow officials involved in nuclear power ministries were fired, as well as some lower level officials directly involved with the Chernobyl' plant and the experiment that led up to the explosion.[67] Taken together, these steps have apparently been fairly effective in containing negative popular responses to the Chernobyl' accident.

This is not to say that Gorbachëv has emerged politically unscathed by the accident. Western newsmen with extensive Moscow contacts indicate that Chernobyl' created an internal political crisis in Moscow, due to divisions within the elite over how to handle the accident.[68] Gorbachëv had identified himself personally with the policy of "openness" in news reporting. Consequently, the failure to apply this policy in the case of Chernobyl' could reflect negatively on his leadership abilities, because it may well have left the impression that he was overruled. Mid-level managers within the Moscow bureaucracy must surely have taken note of Gorbachëv's inability or unwillingness to carry out a policy with which he had strongly associated himself.

There have been increasing signs that some of Gorbachëv's policies are meeting with resistance. While some resistance would probably have developed in any case, Chernobyl' certainly contributed to it. Similarly, Gorbachëv may have to bear blame for the negative international repercussions of the accident. Both of these developments could undermine his ability to control Soviet policy and are, in this sense, detrimental to his consolidation of political power.

A Soviet military helicopter sprays decontamination chemicals on the countryside near the Chernobyl' nuclear plant on May 28.

—TASS from Sovfoto.

A political price for Chernobyl' may also be demanded from other members of the political elite. Gorbachëv could try to use the situation to purge or isolate those within the political elite who have opposed his "openness" policy, or to get rid of Ukrainian party chief Volodymyr Shcherbytskyi, a Brezhnev holdover long rumored to be slated for political demise. Central Committee Secretary Vladimir Dolgikh, another Brezhnev-era appointee, is also vulnerable because his responsibilities involve heavy industry and energy. Thus far, however, both Shcherbytskyi and Dolgikh remain in place.

The impact of Chernobyl' on the Soviet military and on civil-military relations has probably been mixed. Military personnel, both active-duty and reserve, have played a major role in the aftermath of the accident. Troops from the Kiev Military District were involved in the evacuation. Chemical defense units took part in the decontamination effort. Military medical sanitation battalions provided health checkups of area residents.[69] Military construction troops have been involved in clean-up efforts as well. Pipe-laying units and railroad troops were brought in to support the cleanup and the construction of the shell over the damaged reactor.[70] The air forces of the Kiev Military District were also involved in efforts to put out the fire and seal the reactor.[71] Additionally, civil defense units assisted in

[65]The Politburo met in a special session to review the government commission report. See *Pravda*, July 21, 1986.

[66]V. Gubarev and M. Odinets, "Chernobyl' AES: Test of Courage," *Pravda*, May 12, 1986; Zh. Tkachenko, "Chernobyl' Will Remember the Courage and the Cowardice," *Sotsialisticheskaya Industriya*, Sept. 17, 1986; and O. Ignat'yev and M. Odinets, "Management Has Moved Back In," *Izvestiya*, July 17, 1986.

[67]*Pravda*, July 21, 1986; "On the Responsibility of Leading Officials at Certain Ministries and Departments Who Are Culpable with Regard to the Chernobyl' AES Accident," *Pravda*, Aug. 14, 1986; and *Radyanska Ukraina* (Kiev), July 27, 1986.

[68]Harrison Salisbury, "Gorbachev's Dilemma," *The New York Times Magazine*, July 27, 1986, pp. 18, 25, 30, 33.

[69]*Krasnaya Zvezda*, May 11, 21, and 25, June 10 and 28, 1986; A. Polyakov, "Duty and Responsibility," ibid., June 11, 1986; idem, "Mile Markers on the Route," ibid., May 18, 1986; and V. Svertsevich, "Chernobyl': Daily Routine," *Komsomolskaya Pravda*, June 12, 1986.

[70]V. Lyapkalo, "Pipe-Layers," *Krasnaya Zvezda*, Aug. 27, 1986; and A. Polyakov, "In the Western Sector," ibid., June 14, 1986.

[71]"In the Hour of Trial," *Krasnaya Zvezda*, June 7, 1986.

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disaster relief support operations.[72]

Activities by military personnel at Chernobyl' received mixed publicity, suggesting that they also received mixed marks from the political leadership for effectiveness. The strongest kudos went to the helicopter pilots and the chemical troops.[73] By contrast, activities by the Defense Ministry's civil defense units have received very little press play; and Chief of National Civil Defense, Army General Aleksandr Altunin has been replaced,[74] apparently because of the poor showing at Chernobyl' of his civil defense units. The replacement of Altunin appears to be the only major military personnel change resulting from the accident. By contrast, officials at some civilian organizations were fired or reprimanded; and the organizational structure for nuclear safety was revamped.

Conclusion

The popular reaction to Chernobyl' is instructive for what it says about the role of public opinion in the USSR. Despite continuing evidence of popular fears about the accident and its consequences, there has been no suggestion of organized public resistance to the Soviet nuclear power program. In other words, there has been no hint of the sort of galvanizing of public opinion that could be expected had Chernobyl' taken place in a Western country. Public opinion does have a larger role under Gorbachëv, if only because this leadership is determined to make more sophisticated use of it. However, there is no evidence that popular pressures related to Chernobyl' have had any impact on a policy—the nuclear power program—to which the leadership is strongly committed.

The negative political reaction to the early leadership attempt to stonewall on Chernobyl' has probably done much to reinforce *glasnost'*. Certainly the accident does not seem to have reversed the Soviet effort to make more effective use of the media—both Soviet and Western. One example is the Soviet treatment of the accident on one of its nuclear-powered submarines in the western Atlantic. Another is the flying of foreign journalists to Afghanistan to observe the much-publicized withdrawal of some Soviet military units from that country.[75] Chernobyl' has apparently shown at least some Soviet leaders that they can get more mileage by manipulating the foreign press than by stonewalling it. Of course, the other side of the coin is that the Soviets are clamping down even harder on those foreign newsmen who try to get stories Moscow does not want told.

In the domestic arena, public discussion of negative events or trends appears to have expanded since Chernobyl'. The relatively forthright treatment of the August 1986 sinking of the cruise ship "Admiral Nakhimov" is one example.[76] The willingness to broach other taboo topics, like the recent ethnic riots in Kazakhstan, is another.[77] In short, the effectiveness of the aggressive, if belated, Soviet public relations campaign on Chernobyl' appears to have strengthened those in the Soviet leadership who argue that more effective control of internal public opinion means more open discussion of subjects traditionally dealt with by silence.

[72]Ibid., May 27, 1986.

[73]Vladimir Zhukovskiy, Vladimir Itkin, and Lev Chernenko, "Helicopters Above the Crater," *Sovetskaya Rossiya*, May 11, 1986; and *Pravda*, Dec. 25, 1986.

[74]*Krasnaya Zvezda*, Sept. 24, 1986.

[75]*Pravda*, Oct. 7, 1986.

[76]As with Chernobyl', the accident received personal attention from top political leaders, and the results of an investigating commission report were endorsed in a Politburo meeting. See *Pravda*, Nov. 2, 1986.

[77]*Kazakhstanskaya Pravda*, Dec. 19, 1986.

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Chernobyl' and Eastern Europe

John M. Kramer

It was not long ago that nuclear power was considered an inexpensive, safe, and environmentally sound answer to the world's energy needs. Today, it is more often associated with soaring costs and interminable delays in construction of new plants, apprehensions about the reliable and safe operation of existing plants, and fear that governments might utilize the nuclear energy industry to acquire, and even use, nuclear weapons. These and related concerns have prompted many governments to reassess, reduce, or even abandon their hitherto ambitious plans for the development of nuclear power.

However, to paraphrase Mark Twain, reports of the demise of nuclear power may be greatly exaggerated, given its projected status in Eastern Europe. All of the governments of that region have announced plans to establish or to augment substantially nuclear-power generating capabilities. Whether these ambitious plans are fully realized is another matter. The past record of nuclear power station (NPS) construction in the region—characterized by extended delays, frequently revised and sometimes abandoned plans, and a plethora of seemingly insoluble logistical, organizational, and administrative problems—suggests that the plans for expansion of nuclear energy capacity may well be underfulfilled, perhaps substantially.

The recent accident at the Chernobyl' nuclear power station in Soviet Ukraine only adds to the long list of problems East European governments face in implementing nuclear power plans. Nonetheless, publicly, governments of the region, while acknowledging the seriousness of the accident and the need to draw appropriate lessons from it, reaffirm their determination to press ahead with their own nuclear plans. This is in part because the damaged Soviet reactor differs in design from those existing or projected in Eastern Europe. But more important, these governments see no serious competitor to the atom in meeting their countries' energy needs. A Polish official, reflecting prevailing official sentiment, remarked that Chernobyl' represents "a lesson, not a verdict." A Czech source even asserted shortly after the accident that scientific progress involves not only successes but also setbacks, including "the loss of life . . . . Mankind has to pay for every advance and this also applies to the field of nuclear power."[1] These sentiments were reflected in the nuclear power plans announced at the 1986 meeting of the Council for Economic Mutual Assistance (CEMA) in Bucharest. At this meeting, Nikolay I. Ryzhkov, chairman of the USSR Council of Ministers, announced that, by the year 2000, East European states would expand their installed nuclear capacity to 50 million kilowatts, versus approximately 8 million kilowatts of installed capacity in 1986. He also maintained that nuclear power would generate between 30 and 40 percent of the electricity then being produced.[2]

Despite such assertions, there is evidence that Chernobyl' has fostered, or reinforced, reservations about nuclear power among political elites throughout Eastern Europe. Poland, for example, has halted construction work "for several months" at its first NPS at Żarnowiec, reportedly because Polish nuclear experts have become "very meticulous" about safety since

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[1]For reactions of Polish and Czech officials, see respectively: *Informationen* (Copenhagen), June 11, 1986, in Joint Publications Research Service, *East Europe Report* (Washington, DC—hereafter *JPRS-EER*), No. 117, Aug. 4, 1986, p. 66; and *Frankfurter Allgemeine Zeitung* (Frankfurt), June 23, 1986, in *JPRS-EER*, No. 110, July 25, 1986, p. 2.

[2]*Pravda* (Moscow), Nov. 4, 1986.

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Table 1: Share of Nuclear Power in East European Electricity Output from the Present to Year 2000

	1985/1986	1990[1]	2000[1]
Bulgaria	32	44	60
Czechoslovakia	20	30	50
GDR	11	15	30
Hungary	25	NA	40
Poland	—	9	40
Romania	—	18	NA

[1]These projections should be treated cautiously for, as the present study clearly demonstrates, all of these countries have a record of substantial underfulfillment of their nuclear plans.

SOURCES: Official publications of the respective countries.

Chernobyl' and fear it is being compromised at Żarnowiec.[3] Indeed, the delay may be even longer than announced, since "swift solutions" to the problems at Żarnowiec would require purchases of materials and equipment from the West with hard currency, of which Poland currently has very little.[4]

Even more outspoken was Nicolae Ceauşescu, general secretary of the Romanian Communist Party, who complained that the Soviet Union "tried to minimize the effects of Chernobyl' " and observed that the "serious damage" suffered by the nuclear facility "makes clear the great hazard posed by nuclear energy gone out of control." Ceauşescu concluded that "similar serious mishaps . . . cannot be ruled out in the future."[5]

Ceauşescu's views appear to reflect the sentiments of many private citizens in Eastern Europe as well. Although there is no antinuclear movement in the region of a magnitude comparable to those found in many Western countries, the accident at Chernobyl' did precipitate popular protests against nuclear power, especially in Poland and East Germany. Not surprisingly, the most widespread protests occurred in Poland—which suffered the highest levels of radioactive contamination from Chernobyl' among the East European states, and where anti-Soviet sentiments are particularly strong. More than 2,000 people in Kraków, organized by the dissident pacifist group "Freedom and Peace," marched to the old royal castle carrying placards and chanting such antinuclear slogans as: "No Iodine from the USSR," "Thou Shall Not Kill," and "Today Chernobyl', Tomorrow Żarnowiec."[6] Five Polish nuclear power experts published an open letter calling on the government to reassess the safety features at Żarnowiec, which, they claimed, had "raised doubts" among the population because many features of the plant, especially the containment structure, had been based upon as yet untested Soviet prototypes.[7] The Żarnowiec project also elicited a petition from some 3,000 residents of Białystok in northern Poland (one of the Polish areas seriously polluted by emissions from Chernobyl') demanding a halt in construction at Żarnowiec until the entire project could be placed under the supervision of the International Atomic Energy Agency and assurances provided that the plant would use only the "most sophisticated" safety systems. The petition further asserted that official assurances about the safety of nuclear power were "not credible."[8]

In the German Democratic Republic (GDR), hundreds of people—doubtless well informed about the Chernobyl' events by West German television—submitted to the government on this year's Environment Day a petition entitled "Chernobyl' Is Everywhere," asserting that Chernobyl' had caused "insecurity and a feeling of being threatened." The petition condemned the government's alleged reluctance to discuss openly the magnitude and consequences of the accident as "irresponsible and socially dangerous," and urged the authorities through a referendum (constitutionally permitted, though never before employed) to initiate a "broad public discussion" about the future of nuclear power and, specifically, whether the GDR should completely abandon it by 1990.[9]

Members of the Evangelical Church in East Germany, long active on issues such as environmental pro-

[3]*Życie Warszawy* (Warsaw), Sept. 5, 1986, in Foreign Broadcast Information Service, *Daily Report: Eastern Europe* (hereafter *FBIS-EEU*), Sept. 15, 1986, p. G/14, citing *Głos Wybrzeża* (Gdańsk), Sept. 1, 1986, reports the halt in construction at Żarnowiec and indicates that it could last for "two or three years." This source adds: "The issue is delicate because, following the Chernobyl' tragedy, specialists are inclined to be overcautious, even though in such cases you can never be too careful."

[4]Ibid.

[5]Tanjug (Belgrade), May 15, 1986 in *FBIS-EEU*, May 16, 1986, p. H/1; *Scînteia* (Bucharest), May 9, 1986, quoted in Radio Free Europe (hereafter RFE), *Romanian Situation Report*, No. 7, July 2, 1986.

[6]On the demonstrations in Kraków see DPA (Hamburg), June 1, 1986, in *FBIS-EEU*, June 2, 1986, p. G/2.

[7]See DPA, May 16, 1986, in *FBIS-EEU*, May 19, 1986, p. G/3, for the text of the letter sent by the Polish nuclear experts.

[8]See cite in fn 6. The Polish Sejm responded to the petition from the residents of Białystok by acknowledging that, while the petitioners undoubtedly were "motivated by a true concern for the future of the country and its inhabitants," the fact remained that nuclear power was "indispensable" in Poland's energy future because of the "limited possibilities" to increase indigenous production of other fuels and the "lack of possibilities" to increase importation of liquid fuels. See PAP (Warsaw), June 10, 1986, in *FBIS-EEU*, June 13, 1986, p. G/5–7, for the text of the Sejm's response. Apparently, there will be some type of containment vessel around the reactors at Żarnowiec—a so-called "semimantle"—but its precise nature remains unclear.

[9]The text of the petition is published in *Across Frontiers* (Berkeley, CA), Fall 1986, p. 10.

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ATOMY PROTI ŽIVOTU-ZDRAVÍ-PŘÍRODĚ
V ČSSR má být v příštích letech uvedeno do provozu 12 atomových reaktorů. Jen do roku 1990 to bude stát nejméně 90 miliard Kčs.
Reaktory v JASL. BOHUNICÍCH, MOCHOVCÍCH a DUKOVANECH nemají radioaktivní zónu chráněnou dvojitým pláštěm – pár kilometrů od osídlení!
Největší plánovaná atomka TEMELÍN s výkonem 4000 megawattu spotřebuje každou vteřinu potoky vltavské vody, které 4 chladírenské věže vysoké 150 metrů rozptýlí do okolí jako radioaktivní páru.
Atomová elektrárna s výkonem 1000 MGW dodává za rok 250 kg plutonia, které stačí na výrobu 25 jaderných hlavic. Uskladnění atomového odpadu a likvidace prozářených elektráren po 20–30 letech provozu půjde na účet našich dětí a dalších generací.
Československo se má stát atomovou zakladnou Varšavské smlouvy.

Vydala skupina ANTIATOM

A postcard distributed by the Antiatom Group in Czechoslovakia. The photo of the Temelin Nuclear Power Station bears the words "Stop the atomic threat from Temelin--Antiatom." On the reverse side is the following text: "ATOMS AGAINST LIFE—HEALTH—ENVIRONMENT. Czechoslovakia is to begin operating 12 atomic reactors in the near future. By 1990 alone, they will have cost at least 90,000 million korunas by 1990. Reactors in Jaslovske Bohunice, Mochovce, and Dukovany have no dual containment structures to shield the radioactive zone—this a few kilometers from human settlements! The largest planned atomic station, at Temelin, with a capacity of 4,000 megawatts, will guzzle up streams of water from the Vltava, which will then be dispersed into the atmosphere as radioactive vapor from four cooling towers 150 meters high. A 1,000-Mw atomic plant produces 250 kg of plutonium a year, enough to arm 25 nuclear warheads. Storing atomic waste and closing burnt-out plants after 20–30 years will be billed to the accounts of our children and later generations. Czechoslovakia is to be the Warsaw Pact's atomic base."

—This postcard was obtained by Radio Free Europe Research. We are grateful for permission to reproduce it here.

tection, also addressed these problems. In one instance, a peace group composed of church members sent a letter of protest to the GDR Council of Ministers that dismissed as "erroneous" official claims about the safety of Soviet-designed nuclear reactors and demanded that all reactors in the GDR be shut down immediately and research be begun on alternative sources of energy.[10] The subject figured "prominently" in the deliberations of the May 1986 synod of the church's leadership conference. One participant remarked that the "crust of taboos" surrounding public discussion of this hitherto unmentionable subject had been broken and a "nuclear debate" had ensued among the people.[11] The hierarchy of the church was more circumspect. Although it acknowledged that Chernobyl' had raised difficult questions as to whether nuclear power was "socially responsible," it predicted that the GDR "would probably have to live with nuclear energy for some time."[12]

A Western source from Czechoslovakia reported "panic" over Chernobyl' and "marked fear" among

[10]For the text of the letter of protest sent to the Council of Ministers, see *Die Tageszeitung* (West Berlin), May 17, 1986, discussed in RFE, *Background Report*, No. 102, July 21, 1986.

[11]Ibid. provides information on the antinuclear deliberations at the synod of the Evangelical Church.

[12]Ibid. East German officials had long contended that discussions of nuclear issues were unnecessary, because the people "were already told . . . that there was no danger." *Informationen*, Mar. 7, 1986, in *JPRS-EER*, No. 046, Apr. 23, 1984, p. 7.

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those residing near NPS's.[13] *Rudé Právo,* the official organ of the Czechoslovak Communist Party, implicitly confirmed this account when it reported that after Chernobyl' "many people" in Czechoslovakia asked whether the development of nuclear power "cannot be slowed down or even stopped."[14] Surprisingly, the dissident group Charter 77, which has been outspoken on many controversial issues over the years, has said relatively little about Chernobyl', although it did criticize official reticence about the accident.[15] However, a new dissident group "Antiatom" has emerged with the goal to "stop the atomic threat" in Czechoslovakia.[16] It has distributed postcards with a picture of the Temelin NPS and warnings about the cost and dangers (as well as the potential for diversion of efforts to the building of nuclear weapons) of the Czechoslovak nuclear power industry.

It would be premature to assume that popular antinuclear sentiment will have no influence on public policy. Several regimes have already sought to assuage popular fears about the dangers of nuclear power by assuring their populations that they have enhanced safety measures to insure that nuclear accidents cannot happen in their country. Public opinion may also have influenced the decision to halt construction temporarily at the Żarnowiec NPS.[17]

Of course, antinuclear protesters face formidable—if not insurmountable—obstacles in achieving their goal of the complete abandonment of nuclear power. First, they operate in political systems that have the capacity to limit sharply their activities. Second, all regimes in the region by now have devoted so many resources to the development of nuclear power that they are unlikely to totally abandon these efforts. Third, just as in democratic societies, there are in Eastern Europe many ardent proponents of nuclear power who sincerely believe that the benefits to be derived from its exploitation far outweigh the risks.

The Case for Nuclear Power

East European proponents see nuclear power as essential if their countries are to close a rapidly widening gap between indigenous consumption and production of energy.[18] As one Czechoslovak official points out, his country "is not exactly awash in fuel and energy resources,"[19] while a Polish counterpart argues that nuclear power is the "only realistic source of additional energy."[20] But a citizen of the GDR captures the essence of this argument most succinctly: "Unless we want to turn off the lights, we just have to live with nuclear power."[21]

Proponents also see nuclear energy as more cost-effective than other nonnuclear sources of power. A Czechoslovak analyst, while admitting that the question of costs is a "complicated" one, nevertheless accepts this rationale "even after including the costs connected with solving problems of the external fuel cycle, such as storage of spent fuel, its transport and reprocessing, and neutralization of radioactive wastes."[22] It is unclear whether these calculations include the total costs of construction of NPS's—and not just operational costs—which are substantially greater for nuclear than for nonnuclear plants. It is likely that they do not.

Supporters also contend that increasing the reliance upon nuclear power while concomitantly reducing reliance upon brown coal and lignite in primary energy consumption would significantly enhance the quality of

[13]See *Luxemburger Wort* (Luxembourg), May 12, 1986, in *JPRS-EER,* No. 096, July 7, 1986, p. 44.

[14]*Rudé Právo* (Prague), July 28, 1986, in *FBIS-EEU,* Aug. 1, 1986, p. D/2. See also *Zemědelské Noviny* (Prague), Aug. 31, 1983, in *FBIS-EEU,* Sept. 2, 1983, p. D/4.

[15]*Dokumenty Charty* (Prague), May 6, 1986, in *JPRS-EER,* No. 091, June 20, 1986, pp. 102–03. A Western source suggests that many dissident groups in Eastern Europe, including Charter 77, have an "agenda full of concerns" (e.g., violations of human rights, inadequate delivery of government social services) that preoccupy them and take precedence over the "need for or desirability of antinuclear lobbying." RFE, *Background Report,* No. 74, May 27, 1986.

[16]See *Kurier* (Vienna), May 9, 1986, in Foreign Broadcast Information Service, *Daily Report: Soviet Union* (Washington, DC—hereafter *FBIS-SOV*) May 12, 1986, p. M/1.

[17]As a Polish publication bluntly stated: "It is probable that nuclear energy could never survive another Chernobyl'-like failure" and added that "reassuring words will not calm frightened people if it is impossible to back up argument with evidence that proves the infallibility of designs, materials, and equipment used in nuclear power stations." *Życie Warszawy,* Aug. 23–24, 1986, in *FBIS-EEU,* Aug. 26, 1986, p. G/4. Reportedly, in Bulgaria, "security systems" at the Kozloduy NPS "have been tripled" since the accident at Chernobyl', while, in the opinion of a Western analyst, the accident accounts for the GDR's decision to place for the first time a containment shell around a reactor (at the Stendal NPS). BTA (Sofia), May 28, 1986, in *FBIS-EEU,* June 4, 1986, p. C/4; and RFE, *Background Report,* No. 102, June 25, 1986.

[18]See John M. Kramer, "Between Scylla and Charybdis: The Politics of Eastern Europe's Energy Problem," *Orbis* (Philadelphia), No. 4, 1979, pp. 929–33, for a fuller exposition of the sources of East Europe's energy gap.

[19]*Pravda* (Bratislava), July 10, 1984, in *FBIS-EEU,* July 12, 1984, p. D/1.

[20]*Rzeczpospolita* (Warsaw), May 1, 1985, in JPRS, *East Europe Report: Economic and Industrial Affairs* (hereafter—*JPRS-EEI*), No.060, July 22, 1985, pp. 5–6.

[21]*The New York Times,* Apr. 15, 1979, p. 27.

[22]See *Planovane Hospodarstvi* (Prague), No. 2, 1985, pp. 24–37, in *JPRS-EER,* No. 055, June 10, 1985, for a detailed analysis of the relative costs of nuclear and nonnuclear sources of power. See also *Rzeczpospolita,* May 1, 1985, in *JPRS-EER,* No. 060, July 22, 1985, pp. 5–6 on this issue. This source argues (incorrectly) that nuclear plants "require no more capital investment than do conventional plants."

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the environment in the region. The choice is a simple one, according to one Polish source: if Poland were to forgo nuclear power, then the future would witness "irreversible destruction of our environment and the turning of Poland into the dirtiest and most poisoned country in Europe."[23] This argument may explain why many East European environmentalists, notably Hungarian, voice little opposition to nuclear power.[24]

Interestingly, proponents of nuclear power—particularly before Chernobyl'—rejected fears regarding the potential for accidents and other threats to public safety as exaggerated, if not fallacious. "Nuclear power is probably the best thing that humanity has ever had from the point of view of avoiding risks," proclaimed a ranking official of the Czechoslovak Atomic Energy Commission.[25] In the view of the director of the Research Institute of Nuclear Energy in Hungary, nuclear power was so "extremely safe" that current safety measures were "excessive" and entailed "excessive costs" and therefore needed to have "realistic limits" placed upon them.[26] If nuclear power represented any danger, such voices argued, it did so only under capitalism, where the insatiable pursuit of profit could lead the power industry to subordinate safety considerations to its own selfish economic interests.

The Soviet and East European approach to nuclear safety, they insisted, sought to prevent accidents from happening through excellence of design, reliability of equipment, and careful operational procedures, rather than using the Western approach of developing contingency plans for "worst-case" scenarios, including meltdowns. Thus, the USSR had long argued that its nuclear technology was so reliable that standard safety features used in the West (e.g., containment vessels to control meltdowns) were superfluous. Several Soviet scientists had even once contended that such features were merely "placebos to placate the people" under capitalism, made necessary by "negative dramatizations" in the press.[27]

Such insouciance is less common since Chernobyl'. Indeed, the Chairman of the USSR State Committee for the Utilization of Atomic Energy has acknowledged that Chernobyl' represents a "severe blow" to the development of nuclear power, adding, however, that the Soviet Union had "no intention" of abandoning the technology "given, of course, the essential condition that a higher level of safety is ensured."[28] East European officials have responded to concerns about nuclear safety since Chernobyl' in two ways: (1) by emphasizing the technical differences between the reactors at Chernobyl' and those in operation in Eastern Europe, and (2) by assuring the population, as a Czechoslovak source put it, that "preventive safety measures . . . are being continually improved on the basis of acquired experience, so as to practically exclude any larger accidents."[29]

None of these rationales for nuclear power—even before Chernobyl'—went unchallenged either among political elites or among private citizens. We shall return to these criticisms when we assess the prospects for nuclear power in Eastern Europe. Before doing so, however, it would be useful to trace the development of nuclear power in the region from its inception in the mid-1950's to the present.

Nuclear Power 1955–70

The stress on nuclear power in Eastern Europe has both ideological and economic foundations. Communist planners historically identified electrification as a key factor in "the construction of the scientific-technological base" of communist society. Hence, nuclear power was seen as facilitating the establishment of mature communism. Furthermore, planners were aware that economic development in the region was rapidly outstripping the capacity of indigenous energy

[23]*Rzeczpospolita*, Dec. 28, 1984 in Joint Publications Research Service, *East Europe Report: Political, Sociological and Military Affairs* (hereafter—*JPRS-EPS*), No. 026, Feb. 26, 1985, p. 191; *Tygodnik Powszechny* (Kraków), May 18, 1986, in *JPRS-EER*, No. 090, June 19, 1986, p. 86. John M. Kramer, "The Environmental Crisis in Eastern Europe," *Slavic Review* (Urbana, IL), No. 2, 1983, pp. 204–21, provides a comprehensive analysis of environmental pollution in the region.

[24]See RFE, *Background Report*, No. 74, May 27, 1986, for an analysis of the dilemma that environmentalists in Eastern Europe face in opposing nuclear power.

[25]*Pravda* (Bratislava), Nov. 6, 1985, in *JPRS-EPS*, No. 123, Dec. 17, 1985, p. 25.

[26]Budapest Domestic Service, Sept. 12, 1984, in *FBIS-EEU*, Sept. 14, 1984, p. F/7.

[27]The Soviet scientists are quoted in *The New York Times*, Jan. 2, 1980, p.23.

[28]The Soviet official is quoted in a dispatch from AFP (Paris), May 2, 1986, in *FBIS-SOV*, May 6, 1986, p. R/11, and in a dispatch from TASS, June 24, 1986 in *FBIS-SOV*, June 25, 1986, p. S/6.

[29]*Rudé Právo*, July 28, 1986, in *FBIS-EEU*, Aug. 1, 1986, p. D/2. However, Soviet officials continue to stress that the most effective way to ensure safety at NPS's is to prevent accidents from happening rather than providing plants with safety features, including containment structures, in case of accident. As one official remarked in a press conference shortly after Chernobyl', "we don't think containment vessels are much more effective, and we believe that the emphasis should be on preventing accidents." Quoted in *The Washington Post*, May 20, 1986, p. A/24. See also the comments of Valeriy Legasov, head of the delegation that presented the official report of the Soviet government on the Chernobyl' accident to the International Atomic Energy Agency. Legasov maintained that Chernobyl' had not changed the minds of Soviet experts about the efficacy of Western-style containment structures, because no such structure could have contained the explosion at Chernobyl'. *The Washington Post*, Aug. 28, 1986, p. A/32.

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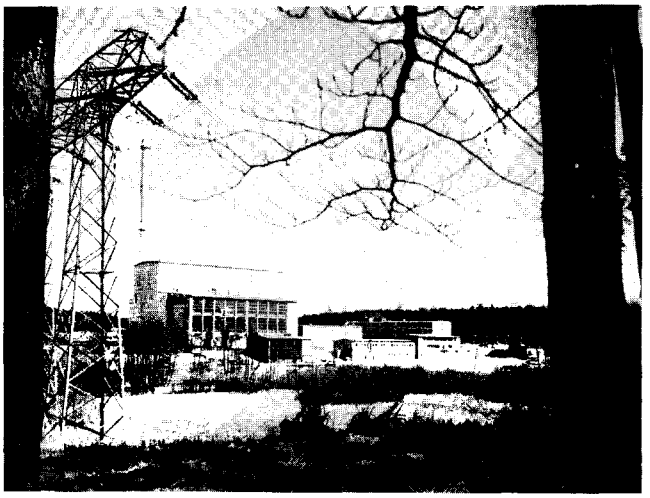
reserves. For example, as early as 1952, economic planners in Czechoslovakia had recommended the development of nuclear power in response to this situation.

On January 17, 1955, the USSR announced that it would cooperate with its East European and Chinese allies in the "peaceful development of atomic science, technology, and national economy."[30] Shortly thereafter, the Soviet Union concluded agreements with all of these states to aid in the conduct of research on nuclear energy and, in the case of Czechoslovakia, the GDR, and Hungary, to provide technical assistance and equipment, including reactors, for the construction of NPS's.[31] For political, economic, and perhaps technological reasons the USSR honored its agreement only with the GDR, whose NPS at Rheinsberg became operational in 1966.

Politically, the upheavals in Hungary and Poland in 1956 and the growing rift between the USSR and the People's Republic of China reminded the Soviet leadership of the tenuous allegiance of its "allies" and of the potential for use of nuclear energy for other than peaceful purposes. These concerns applied especially to Czechoslovakia, which opted at its A–1 plant for a Soviet-designed reactor that used gas as a coolant, heavy water as the moderator, and natural uranium as the fuel. This reactor had the great advantage of permitting Czechoslovakia to rely upon its abundant indigenous reserves of natural uranium, thereby making it independent of any external source of supply (i.e., the USSR) for enriched uranium required by other types of reactors. The A–1's utilization of indigenous natural uranium threatened to eliminate an important mechanism of Soviet control over the nuclear programs of Eastern Europe—reliance upon the USSR as the sole source for enriched uranium—and, as a heavy-water reactor, the A–1 also was capable of producing fissionable material that could be used for military purposes. These two factors ultimately led the USSR to withhold its assistance. Reportedly, similar considerations led the USSR to "advise" Poland to abandon its plans for an independent nuclear program based on reactors fueled by natural uranium.[32] The one agreement that the USSR did honor was with the GDR, which opted for a light-water reactor not well suited for the production of fissionable materials and also fueled by enriched uranium supplied by the USSR.[33]



A 1966 view of East Germany's Rheinsberg Nuclear Power Station, the first operational NPS in Eastern Europe.

—Eastfoto.

From an economic standpoint, the Soviet Union may have feared that extensive use of nuclear power in Eastern Europe would lessen the need to import large quantities of liquid fuels from the USSR. By the mid-1960's, the bloc countries had completed construction of an extensive oil pipeline network (the so-called *Druzhba*, or "Friendship" pipeline) that was bringing annually upwards of 20 million tons of petroleum from the Soviet Union, and the prospects were for even more sales of oil—and hence, greater revenues—in the near-term future.

Finally, technological considerations also may have influenced the USSR. The type of reactor that Czechoslovakia had requested was not then operational in the USSR, and Soviet scientists knew relatively little about it. On the other hand, the GDR requested the very type of reactor that the USSR was using for the development of its own civilian nuclear power program. Indeed, the Soviet Union reportedly honored its agreement with the GDR in part because it wanted to undertake joint experiments with German nuclear scientists for the sake of the Soviet domestic nuclear program.[34]

Whatever the precise combination of factors that influenced the Soviet decision, its consequences were devastating for East European nuclear power develop-

[30]*Pravda* (Moscow), Jan. 18, 1955, carries the offer of nuclear cooperation between the Soviet Union and its allies.

[31]Unless otherwise noted, the following discussion is drawn primarily from Leslie Fox, "Soviet Policy in the Development of Nuclear Power in Eastern Europe," in US Congress, Joint Economic Committee, *Soviet Economy in the 1980's: Problems and Prospects*, Part I, US Government Printing Office, 1983, pp. 460–73; and J.G. Polach, "Nuclear Power in East Europe," *East Europe* (New York), No. 5, 1968, pp. 3–12.

[32]Polach, "Nuclear Energy in Czechoslovakia: A Study in Frustration," in *Orbis*, No. 3, 1986, p. 849.

[33]Ibid.

[34]Ibid., p. 851.

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ment. Without the prospect of Soviet aid, Hungary abandoned its initial plans completely. Czechoslovakia continued the development of the A–1 plant, relying primarily on internal resources for expertise and technology. Predictably, these efforts were enormously costly, wasteful of scarce resources, and duplicative of research already conducted in other countries. When the A–1 plant was finally completed in 1972, it was 12 years behind schedule, and continuous problems plagued its operation. It was finally closed down in 1977.[35] The story of Czechoslovakia's A–1 project clearly refutes the recent contention of one Western analyst that the plant was "duly built with the active assistance of the Soviet Union."[36]

In 1965–66, in a seeming reversal of policy, the USSR concluded a new set of agreements with all East European states, except Romania and Poland, for the development of nuclear power. The agreements with Bulgaria, the GDR, and Hungary obligated the USSR to provide each of them with technical assistance and equipment, including two 440-megawatt (Mw) pressurized light-water reactors fueled with lightly enriched uranium for NPS's to be completed by 1975. The type of reactor to be provided—which was to become standard throughout Eastern Europe—was patterned after a model produced by Westinghouse (in fact it is often referred to as "Eastinghouse") and is considered reliable and economical by nuclear experts in the West. The agreement with Czechoslovakia envisioned construction of the A–2 and A–3 nuclear power plants with reactors of the same type—albeit of larger capacity—as that at the A–1 plant. Finally, in 1970 the Soviet Union concluded an agreement with Romania similar to those with Bulgaria, the GDR, and Hungary.

Several considerations motivated the USSR to conclude these agreements. The first was the desire to prevent East European states from seeking assistance in nuclear development from capitalist countries. In 1964–65, Czechoslovakia had approached Britain and France, and later Canada, about the purchase of a reactor and other equipment for the A–1 project. Ironically, this initiative grew directly out of the Soviets' refusal to help with the completion of this project. Romania, desirous of achieving some degree of independence from the Soviet Union, had also sought nuclear aid from several capitalist states, including Britain, Canada, and Sweden. None of these initiatives succeeded (largely because the United States, for security reasons, prevented the export of much of the necessary equipment). However, Romania did conclude an agreement with the United States in 1968 to exchange data on the peaceful uses of nuclear energy and the following decade with Canada for the supply of reactors at the Çernavodă NPS.[37]

Second, by binding the East European states more closely to the USSR in an important area of technology, the agreements enhanced the Soviets' overall political control of the region. The USSR sought to ensure this by supplying the Eastern Europeans with reactors fueled by lightly enriched uranium and by requiring them to export to the Soviet Union their indigenous reserves of uranium for enrichment and to return all spent fuel rods to the USSR for reprocessing. These policies again led to conflict with Czechoslovakia. The history of the A–1 plant repeated itself as the USSR refused to supply the heavy-water reactors fueled by natural uranium envisioned for the A–2 and A–3 projects. Finally, after the Soviet invasion of Czechoslovakia in 1968, the latter opted—or was forced—to adopt the same type of reactor used by other East European states.[38]

Third, plain economic self-interest may have further motivated the USSR to conclude the 1965–66 agreements: by including Eastern Europe in its market for reactors, the nascent nuclear power industry in the Soviet Union was able to achieve otherwise unrealizable economies of scale in production. Presumably, by this time the USSR also did not feel that the East Europeans could achieve sufficient nuclear power capacities in the foreseeable future to threaten current and projected Soviet exports of liquid fuels to the region.

In any event, the Soviet Union did honor its agreements with Bulgaria and the GDR for the delivery of reactors, which permitted these countries to open

[35]Chapter 77 alleges that the A–1 plant suffered two serious accidents (that included loss of life and radioactive steam escaping into the atmosphere) in 1967 and 1977, respectively, and that the latter mishap so damaged both the primary and secondary cooling circuits and the reactor itself that the plant had to be closed. Czechoslovakia never has acknowledged officially that the accidents occurred, but in 1980 a member of the Czechoslovak Nuclear Energy Commission did disclose that there had been a "defect" at the A–1 plant that damaged the reactor and led to the closure of the plant. Radio Prague, Aug. 8, 1980, in RFE, *Background Report,* No. 207, Aug. 14, 1980, provides an extensive analysis of all these issues.

[36]This contention appears in RFE, *Czechoslovak Situation Report,* No. 8, May 26, 1986. In contrast, in 1964, a Czech official called his country's experience in the development of nuclear power "depressing" and, in 1968, at the height of liberalization in Czechoslovakia, another ranking official asserted that "the results of the Czechoslovak atomic programs are tragic." These comments are found in, respectively: *Jaderna Energie* (Prague), No. 10, 1964, p. 356, and *Práce* (Prague), May 21, 1968, both quoted in Polach, "Nuclear Energy in Czechoslovakia," pp. 848 and 851.

[37]*The New York Times,* July 26, 1984, p. 25; ibid., Nov. 23, 1968, p. 93.

[38]Regarding this agreement, the former director of the Czechoslovak uranium industry (who escaped to the West after the invasion) declared that "I would never have signed this. Our children will condemn us for it some day." *The New York Times,* Mar. 5, 1972, p. 20.

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NPS's in 1974–75. The agreements with Czechoslovakia and Hungary, however, were substantially modified and implemented only after protracted delays, and the one with Romania was never implemented. Hence, the overall record of achievement during this period fell far short of initial expectations: by 1970 only one NPS—at Rheinsberg in East Germany—was in commercial operation.

Nuclear Power Since 1970

Several factors contributed to a renewed emphasis on nuclear power in the 1970's. Politically, the USSR saw the development of nuclear power as part of a broader process of economic and—by implication—political integration in the region (a task made particularly compelling by the events in Czechoslovakia in 1968). This goal was to be pursued primarily under the auspices of CEMA, whose 1971 "Comprehensive Program for the Development of Socialist Integration" included measures to develop nuclear power.[39]

The East Europeans themselves viewed nuclear power more positively in the aftermath of the October 1973 war between Israel and the Arab states and the ensuing dislocations in international and Soviet energy prices and supplies. A communiqué issued by CEMA shortly after the October 1973 war asserted that "acceleration of the nuclear construction program in the CEMA countries was projected as a response to changing oil prices."[40]

Soviet energy also was becoming more expensive as reserves in European Russia became depleted and exploitation shifted primarily to remote and inhospitable regions of Western Siberia. Consequently, beginning in the late 1960's, the USSR had urged Eastern Europe to rely more on the world market and indigenous resources to close its energy gap.[41] Nuclear power was one means to this end.

The establishment of Interatominstrument in 1972 and Interatomenergo in 1973 represented visible institutional commitments to nuclear power. The former, a legally autonomous international association composed of the Soviet Union and all the East European members of CEMA except Romania, is headquartered in Warsaw. It coordinates industrial production, scientific research, and technical collaboration among the 15 facilities in the member states responsible for production of instruments of nuclear engineering. In 1975, the association established branches at Pleven in Bulgaria, Zielona Góra in Poland, and Dubna in the USSR. Although initially heavily subsidized, the association reportedly became economically self-sustaining by 1978.[42]

Interatomenegro, founded by the members of CEMA plus Yugoslavia, coordinates the planning, design, standardization, production, delivery, construction, and operation of equipment for NPS's. Under its auspices, each participating state assumes responsibility for producing specific components for reactors and other nuclear equipment. Czechoslovakia plays a key role here, thanks to a 1974 agreement with the USSR whereby it manufactures, under Soviet license, Soviet-designed equipment and components, including reactors, for NPS's. At present, it exports approximately one-half of its total output of such equipment and components to CEMA states, and it has already supplied reactors to the GDR and Hungary. Between 1986 and 1990, Czechoslovakia is scheduled to supply reactors and turbine systems for two power blocks in the GDR, two reactors to Poland, and special armatures to Bulgaria, the GDR, and the USSR. To date, all of the reactors exported are of the standard 440-Mw capacity, although Czechoslovakia is now beginning to manufacture 1,000-Mw capacity reactors (potential foreign customers reportedly include Bulgaria and Romania).[43]

The CEMA states also are cooperating in the development of a 750-kilovolt power grid that entails the construction of high-tension transmission lines from a complex of NPS's in the USSR. One of these lines—the so-called Vinnytsya-Albertirsa line—is now completed and links power stations in Soviet Ukraine with the power grids of Hungary and Czechoslovakia.[44] According to Judith Thornton, nuclear stations in Ukraine

[39] *Izvestiya* (Moscow), July 31, 1971.

[40] BTA (Sofia), June 21, 1974, in RFE, *Background Report*, No. 5, June 28, 1974. On the increase in price for Soviet energy after 1975, see John M. Kramer, "Soviet-CEMA Energy Ties," *Problems of Communism* (Washington, DC), July-August 1985, p. 41.

[41] For a particularly penetrating analysis of the increasingly restricted capacity of the USSR to close completely East Europe's energy gap, see István Dobozi, "Timely Questions of CEMA Cooperation in Supplying Raw Materials and Energy," *Kulgazdaság* (Budapest), No. 1, 1984, pp. 14–25 in *JPRS-EEI*, No. 030, Mar. 13, 1984, pp. 4–18.

[42] *Economic News of Bulgaria* (Sofia), No. 6, 1984 in *JPRS-EEI*, No. 131, Dec. 5, 1984, 36; Fox, loc. cit., p. 485. On p. 6 of "Atomic Energy in Eastern Europe: Trends and Prospects for the Year 2000," a paper presented at the Annual Convention of the American Association for the Advancement of Slavic Studies, 1981, Paul Josephson reports that Interatominstrument is economically self-sufficient.

[43] On the operation of Interatomenergo, see *Economic News of Bulgaria*, No. 6, 1984, in *JPRS-EEI*, No. 131, Dec. 5, 1984, p. 36. More detailed analyses of Czechoslovakia as an exporter of nuclear equipment are included in *Hospodarske Noviny* (Prague), No. 48, 1985, in *JPRS-EEI*, No. 034, Mar. 11, 1986; *Planovane Hospodarstvi* (Prague), No. 2, 1985, in *JPRS-EEI*, No. 055, June 10, 1985.

[44] RFE, *Background Report*, No. 77, Apr. 2, 1979, provides extensive background on the 750-kilovolt power grid project.

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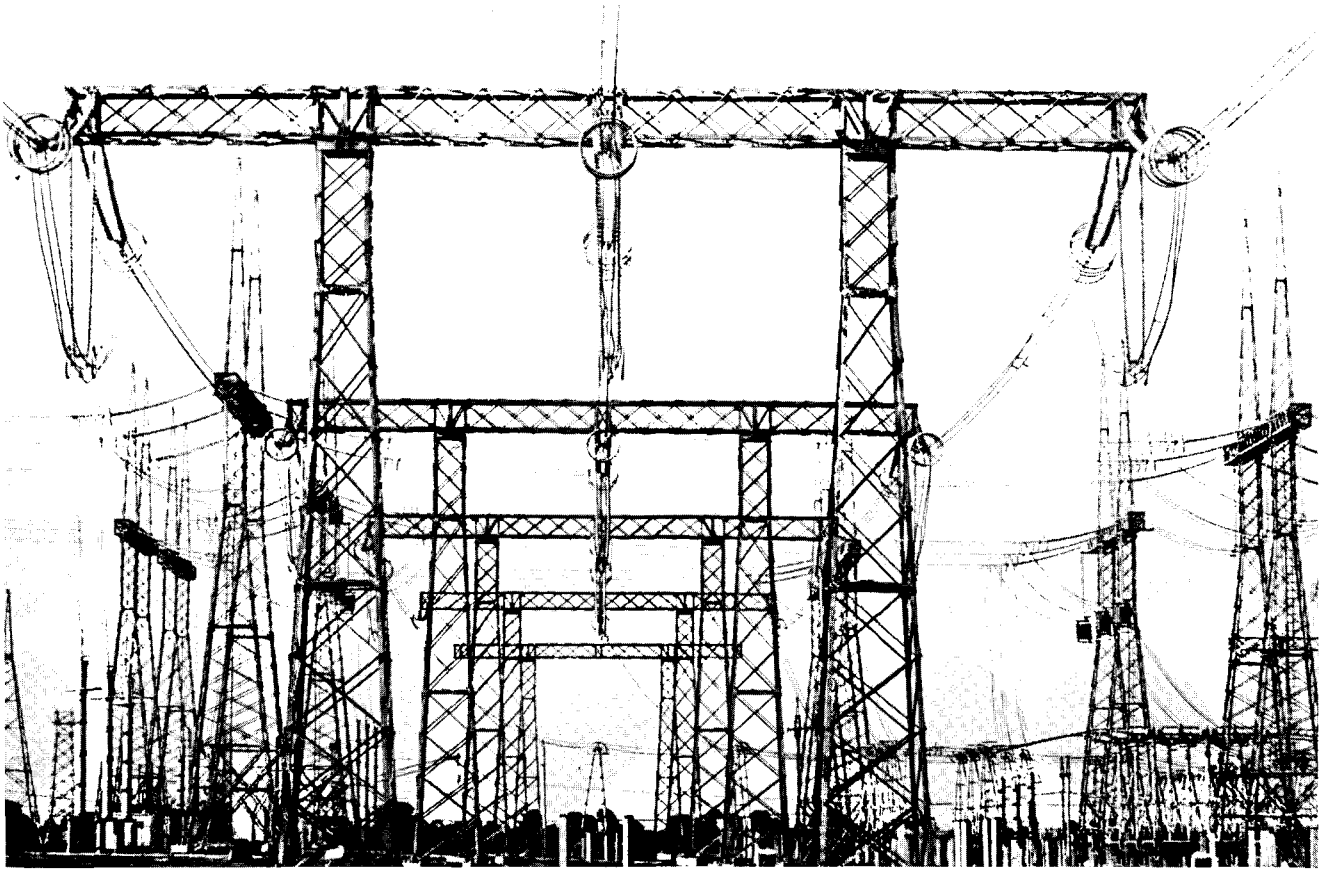

A portion of the 750-kilovolt transmission line from Vinnytsya in Soviet Ukraine to Albertirsa in Hungary upon the line's completion in October 1978.

—TASS from Sovfoto.

cording to Judith Thornton, nuclear stations in Ukraine contributed significantly to total Soviet exports of electricity to Eastern Europe (principally Hungary and Czechoslovakia) in 1985. How, if at all, the supply of Soviet-generated electricity to Eastern Europe has been affected by the loss of generating capacity at the Chernobyl' plant and the staggered, temporary shutdown of all Soviet Chernobyl'-type reactors to enhance their safety features is not yet apparent.[45]

In March 1979, as part of the power-grid project, the USSR, Czechoslovakia, Hungary, and Poland agreed to joint financing of the Khmel'nytskyi NPS in Ukraine. The East European participants are to finance one-half of the estimated $2.2 billion cost of the project, with Poland contributing more than $600 million and Czechoslovakia over $350 million. However, these figures represent only nominal costs: the total cost to the East Europeans for this project may be more than double the published figures. The participants were to be repaid with electricity from the station between 1984 and 2003, and thereafter could purchase electricity at regular commercial rates.[46] As of the end of 1986, the Khmel'nytskyi plant was still under construction, and hence was not delivering any power.

[45]See Judith Thornton, "Soviet Electric Power after Chernobyl': Economic Consequences and Options," *Soviet Economy* (Washington, DC), Spring 1986. *Literaturna Ukraina* (Kiev), Mar. 27, 1986, in *FBIS-SOV*, May 6, 1986, p. S/1, reports that Chernobyl' supplied power to the CEMA power grid. A recent Soviet commentary noted that the situation regarding the supply of electricity to the economy and the population is tense: "To put it more simply, there is a power shortage. There are many causes of that. Including, of course, Chernobyl'." *Sotsialisticheskaya Industriya* (Moscow), Sept. 30, 1986. Overall, Chernobyl'-type reactors accounted for approximately 5–6 percent of the electricity generated in the USSR in 1985. Reportedly, the temporary closure of these reactors for "retrofitting" will reduce their total output by about 10 percent in 1986. See RFE, *Background Report*, No. 124, Sept. 9, 1986, for details. Hungary—which derives almost 30 percent of its electricity from the CEMA grid—would be the country most vulnerable in Eastern Europe to any reduction in exports of electricity from the USSR. MTI (Budapest), Nov. 4, 1986, in *FBIS-EEU*, Nov. 4, 1986, p. AA/12. To date, Czechoslovakia is the only country in the region reporting a drop in Soviet electricity deliveries because of Chernobyl'. To compensate for the shortfall, the USSR has offered to increase exports of natural gas. Radio Hvezda (Bratislava), July 23, 1986 as discussed in RFE, *Background Report*, No. 124, Sept. 9, 1986.

[46]*Trybuna Ludu* (Warsaw), Feb. 20–21, 1982, in (footnote cont. on p. 48)

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Fewer details are available concerning a similar agreement for participation by Bulgaria and Romania in the construction of another NPS (sometimes referred to as the "South Ukraine II") on the west bank of the River Bug in Soviet Ukraine and a transmission line from the plant across Romania to Bulgaria. The power block of this plant, with a 1,000-Mw reactor, was installed in 1982, and a similar reactor became operational in 1985. During the 1986–90 period, four additional 1,000-Mw reactors are to be installed, all manufactured at the "Atommash" complex in Ukraine, which is being developed for the serial-line production of this type of reactor. The precise contribution of the East European participants to this project and the terms of repayment have not been made public.[47]

This multilateral cooperation serves as a veneer for Soviet control of the nuclear activities of the CEMA states. As noted above, the East European states are required to obtain enriched uranium for their reactors from the USSR, as well as to return spent fuel for reprocessing. The Soviets also control the division of labor among the member states within the multilateral nuclear programs of CEMA, the design and standardization of nuclear equipment, the advanced training of scientists and other specialists, the export of nuclear technologies, the dissemination of technical information, and a myriad of other activities that ensure that the East European states are unable to develop independent nuclear programs.

The USSR is also a major supplier of components, including reactors, for East European NPS's. In the 1970–80 period, the CEMA states ordered 19 reactors from the USSR, 11 of which were delivered on schedule. In the future, the USSR is to specialize in the delivery of 1,000-Mw reactors, while Czechoslovakia will be the primary supplier of 440-Mw reactors. Bulgaria is the first East European state to begin installing a 1,000-Mw reactor. In 1979, it ordered two such devices for the fifth and sixth power blocks at the Kozloduy NPS and plans to install four similar reactors at a plant currently under construction in the Belene region. Overall, from 1986 to 1990, the USSR is to supply approximately 50 percent of the requisite equipment for construction of NPS's in CEMA states.[48]

Nuclear cooperation in CEMA has elicited from the participants open and frequent criticisms that evoke a sense of déjà vu in anyone familiar with the problems of CEMA in other areas of cooperation. A common complaint focuses upon delays in fulfillment of contractual obligations by the participating states. Premier Lubomir Štrougal of Czechoslovakia, after noting that his country has important cooperative agreements with the Soviet Union and other CEMA states for the delivery of reactor components, charged that its "partners" are "lagging behind from the standpoint of timetable" in the fulfillment of these agreements.[49] This situation may become even more acute, since the "Atommash" complex in the USSR has encountered massive problems in construction and is far behind schedule.[50] Premier Štrougal also has criticized "foot-dragging and disputes" in the construction of the Khmel'nytskyi NPS and its transmission line. "I do not think we can reconcile ourselves to further delays in the construction" of these facilities, he declared.[51] Reportedly, other CEMA states accuse Czechoslovakia of these very same sins, and Czechoslovak sources virtually admit to the charges.[52]

There also are numerous complaints about the quality and price of components in cooperative projects. Referring to a recent meeting of the CEMA states, Premier Štrougal asserted that they had addressed the subject "very frankly and sometimes very critically, and I believe with justification."[53] A Western source adds that East Europeans privately complain that the division of labor within CEMA creates "inflexible links to outdated Soviet technology," which is a "sure recipe" for maintaining the "inefficiency and declining technological competitiveness Eastern Europe is struggling to overcome."[54]

An unusually frank article in a Slovak publication provides revealing insights into the difficulty that Czechoslovakia (and, perhaps, other CEMA states) has experienced in ensuring that Soviet nuclear equip-

RFE, *Polish Situation Report*, No. 13, July 27, 1982, provides background on the Khmel'nytskyi project. See also RFE, *Background Report*, No. 77, Apr. 2, 1979. The reason that nominal and actual costs in CEMA projects diverge is twofold: (1) the creditor in these projects, i.e., the East Europeans in the case of Khmel'nytskyi, typically extends to the borrower an implicit subsidy through an artificially low interest rate (usually 2 percent) on the credit; (2) the CEMA practice is to value credits and payments at their respective times of delivery, thereby devaluing the former in times of inflation.

[47]RFE, *Background Report*, No. 129, Nov. 18, 1985, provides extensive details on the "South Ukraine II" project.

[48]On the role of the USSR in CEMA nuclear projects, see *Hospodarske Noviny*, No. 40, 1985, in *JPRS-EEI*, No. 092, Dec. 9, 1985, p. 7.

[49]For Premier Štrougal's criticism, see Prague Domestic Television, July 4, 1981, in *FBIS-EEU*, July 8, 1981, p. AA/13.

[50]On the multiple problems encountered at the "Atommash" Complex, including that its foundation cracked as a function of unexpected land erosion, see *The Washington Post*, Nov. 9, 1983, p. A/1; and *The New York Times*, Apr. 1, 1984, p. 30, which also provides additional information on the "Atommash" Complex as well as on the overall state of nuclear equipment production and the problems being encountered therein.

[51]*Rudé Právo*, Oct. 19, 1983.

[52]See *Zivot Strany* (Prague), No. 14, 1982, in RFE, *Czechoslovak Situation Report*, No. 15, Aug. 25, 1982.

[53]Premier Štrougal's comments are reported in Prague Domestic Service, June 10, 1982, in *FBIS-EEU*, June 11, 1982, p. AA/4.

[54]On alleged Eastern European dissatisfaction with Soviet technology, see *The Washington Post*, Dec. 17, 1985, p. A/22.

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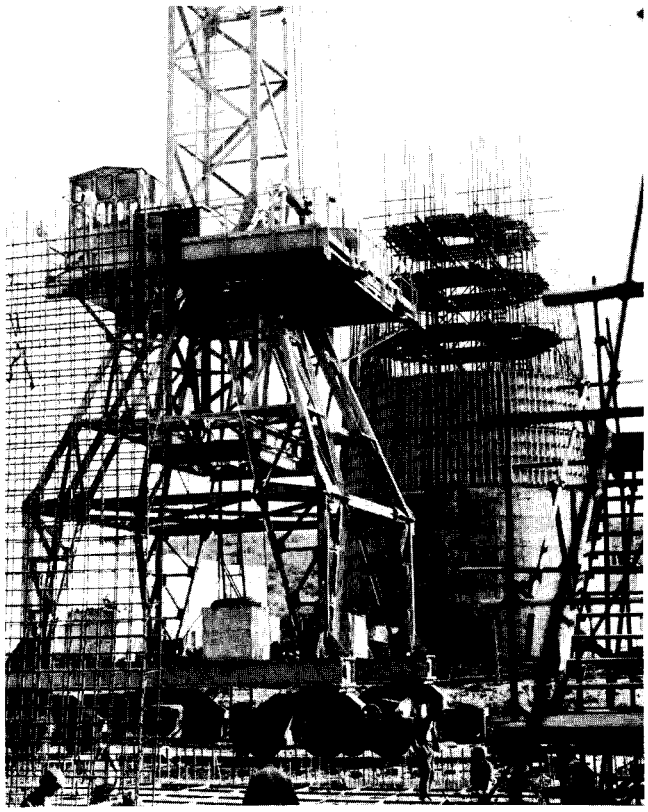
ment meet local safety standards. This difficulty, the publication declared, represents a "fundamental shortcoming" in the completion of new power projects. The publication adds that the "technological process of increased nuclear safety demands new elements, new design solutions," and that the "frequent and favorite" Soviet response that "power blocks are identical" no longer applies.[55]

According to Stanislav Havel, Chairman of the Czechoslovak Commission for Nuclear Energy, in an interview shortly before the disaster at Chernobyl', one of the primary goals of CEMA nuclear cooperation is to achieve "considerably greater reliability for nuclear facilities and the safe operation of NPS's."[56] His statement comes nearly two years after Czechoslovakia had reportedly "significantly altered" Soviet-designed reactors to enhance their "reliability, safety, and technical production characteristics"—alterations accepted by the GDR, Hungary, and Poland.[57] Interestingly, ranking officials of the nuclear power industry in both Czechoslovakia and the USSR held talks in August 1986 to discuss their respective country's role "in the development of nuclear power and its safety."[58]

Finally, comments by Polish officials suggest general unhappiness with the self-styled "informal" procedures CEMA has developed to exchange information regarding nuclear accidents and environmental hazards that could ensue, and in particular with how the USSR transmitted information about the Chernobyl' disaster. Thus, Jerzy Urban, the official press spokesman for the Polish government, informed listeners that following "difficulties in the way of responding to certain facts" about Chernobyl', the USSR and Poland have agreed "to more precisely define" procedures for reporting emergencies, procedures that previously had "not been precise enough."[59]

National Programs Since 1970

Bulgaria. Bulgaria is among the six leading nations in the world—and the leading nation in Eastern Europe—in terms of the percentage of its electricity generated by nuclear power. Its installed nuclear capacity



Construction at the Kozloduy Nuclear Power Station in Bulgaria in 1971.

—Eastfoto.

of 1,760 Mw, in four reactors at the Kozloduy NPS, ranks it behind only Czechoslovakia and East Germany in installed capacity in the region.

Currently, construction is under way on two more power blocks at Kozloduy, each to be equipped with a 1,000-Mw reactor supplied by the USSR. Work also has begun on another NPS at Belene, to be equipped with four similar reactors, which is planned to be fully operational by the mid 1990's. Reportedly, the USSR was to supply these reactors, but it now appears that the first one (scheduled for delivery in late 1987) may come from—and be the first reactor of this capacity manufactured in—Czechoslovakia.[60]

Overall, Bulgaria, where nuclear power will generate over 30 percent of total domestically produced elec-

[55]*Pravda* (Bratislava), July 10, 1984, in *FBIS-EEU*, July 12, 1984, p. D/1.

[56]Chairman Havel's comments are carried by Czechoslovak Television, Apr. 18, 1986, as quoted in RFE, *Czechoslovak Situation Report*, No. 8, May 26, 1986.

[57]*Hospodarske Noviny*, No. 48, 1985, in *JPRS-EEI*, No. 034, Mar. 11, 1986, p. 2, notes the alterations—reportedly "on the recommendation of Soviet specialists"—in Soviet-designed reactors.

[58]CTK (Prague), Aug. 26, 1986, in *FBIS-EEU*, Aug. 27, 1986, p. D/5 reports on the meeting of Czechoslovak and Soviet nuclear officials.

[59]*The Washington Post*, May 7, 1986, p. A/36. On the "informal" procedures that CEMA purportedly has developed to exchange information on mishaps at NPS's, see *Jaderna Energie*, No. 3, 1984, as discussed in RFE, *Czechoslovak Situation Report*, No. 8, May 26, 1986.

[60]*Energetika* (Sofia), No. 8, 1984, in *JPRS-EEI*, No. 131, Dec. 5, 1984, pp. 37–38; *Rabotnichesko Delo* (Sofia), Sept. 12, 1984, in *FBIS-EEU*, Sept. 18, 1984, p. C/1. For extensive background on the development of nuclear power in Bulgaria, see RFE, *Bulgarian Situation Report*, No. 7, May 12, 1984.

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tricity in 1986, hopes to increase this percentage to 60 by the year 2000. Additionally, the plants at Kozloduy and Belene are to provide for the centralized supply of heat to nearby population and industrial centers, and in the "near future," construction is to begin on the country's first NPS devoted solely to the production of heat. The latter, with an initial heating capacity of 500 Mw in each of two blocks, will be expanded "at a later stage" to an overall capacity of 2,000 Mw. By 1995, Bulgaria hopes that such plants will supply approximately 17 percent of the country's "general heating consumption."[61]

These ambitious targets are unlikely to be fulfilled on schedule. Already a joint decree of the highest bodies of the Bulgarian Communist Party and the government has harshly criticized the pace of construction at the fifth block at Kozloduy, originally scheduled to be fully operational in late 1985.[62] A special committee, headed by a Politburo member, now oversees construction of the project, but work continues "to move at an extremely slow pace" and is currently a year behind schedule. Official publications, although typically reticent in providing detailed information, have identified shortages of labor (especially of highly skilled technicians), and related personnel problems, as well as delays in the supply of essential equipment as the primary culprits for the slowdowns. To reduce the labor shortage at Kozloduy, Bulgaria has imported "guest workers" from Cuba, Ethiopia, Nicaragua, Poland, and Vietnam.[63] The plant at Belene has experienced similar delays, apparently for the same reasons. Consequently, work there in the 1986–90 period must proceed under "tense conditions of organization and planning" if the project is to be completed on schedule.[64]

Czechoslovakia. Currently, Czechoslovakia has two NPS's in commercial operation: one at Jaslovske Bohunice and the other at Dukovany in southern Moravia. Both plants are equipped with 440-Mw reactors, the former with four reactors (the first two built in the USSR, the others in Czechoslovakia), the latter with two reactors already operational and a third to become so by the end of 1986 (all manufactured in Czechoslovakia).

By the year 2000, Czechoslovakia plans to have installed an additional 440-Mw reactor at Dukovany, as well as four more reactors at each of the two NPS's currently under construction, at Mochovce in western Slovakia and Temelin in southern Bohemia. The reactors at the Temelin plant will be the first ones in Czechoslovakia with a 1,000-Mw capacity and, more significantly, the first ones to be protected by a containment vessel.

If the plans for the Dukovany, Mochovce, and Temelin plants materialize, then Czechoslovakia would have approximately 9,000 Mw of installed nuclear capacity by the turn of the century. Nuclear power is projected to generate approximately 30 percent of all electricity in 1990, and as much as 50 percent by the year 2000. The current proportion is 20 percent. Additionally, all of these plants will supply heat and hot water to industrial and municipal customers; the first conduit for this purpose is currently under construction between Jaslovske Bohunice and the nearby municipality of Trnava.[65]

It is highly doubtful, however, that these targets will be met. Though considerable difficulties have plagued the construction of NPS's throughout the world, the assessment of one Western source that "the implementation of the nuclear energy program in Czechoslovakia is a particularly sorry case,"[66] appears merited in light of the evidence available. For example, in 1978, Czech officials projected that Czechoslovakia would possess 10,280 Mw of installed nuclear capacity by 1990,[67] yet it is highly unlikely that installed capacity will exceed 4,400 Mw by that date. Even this assessment assumes that all reactor blocks at Dukovany and the first two at Mochovce are operational by then. If the experience at Jaslovske Bohunice and Dukovany is at all indicative, even this scaled-down projection may be overly optimistic.[68] Even an official publication has called the plant at Mochovce "the worst-prepared building project of its kind" and added that "mistakes in and modifications of the early stage

[61] *Energetika*, No. 2, 1985, in *JPRS-EEI*, No. 061, July 23, 1985, pp. 2, 5, provides a detailed discussion of these issues.

[62] On the difficulties encountered in construction at Kozloduy, see, *Energetika*, No. 10, 1983, in *JPRS-EEI*, No. 015, Feb. 3, 1984.

[63] *Zemedelsko Zname* (Prague), Feb. 13, 1986, cited in RFE, *Background Report*, No. 72, May 23, 1986, reports on the use of foreign workers at Bulgarian nuclear projects.

[64] Sofia Domestic Service (Sofia), Nov. 26, 1985, in *FBIS-EEU*, Nov. 29, 1985, p. C/3–4.

[65] The following constitutes a selective list of sources detailing plans for nuclear power in Czechoslovakia: *Planovane Hospodarstvi*, No. 4, 1985, in *JPRS-EEI*, No. 071, Sept. 9, 1985; *Rudé Právo*, Sept. 21, 1985, in *FBIS-EEU*, Oct. 1, 1985, p. D/3; *Rudé Právo*, June 11, 1986, in *FBIS-EEU*, June 24, 1986, p. D/4; *Pravda* (Bratislava), May 22, 1985, summarized in RFE, *Czechoslovak Situation Report*, No. 14, Sept. 4, 1985. Data on the generation of heat at NPS's from *Práce*, Oct. 7, 1986, in *FBIS-EEU*, Oct. 24, 1986, p. D/9.

[66] RFE, *Czechoslovak Situation Report*, No. 14, Sept. 4, 1985.

[67] Ibid.

[68] On the problems encountered in making operational the power blocks at the Jaslovske Bohunice and Dukovany NPS's see, respectively, *Pravda* (Bratislava), May 2, 1984, in *FBIS-EEU*, May 7, 1984, p. D/15; and *Lidová Demokracie* (Prague), May 6, 1983, in *FBIS-EEU*, May 13, 1983, p. D/10. The latter source provides a particularly informative account of this issue.

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Table 2: Installed Nuclear Capacity in Eastern Europe, (On Line as of September 1986 and Projected)

Country/plant	Installed capacity on line		Plants under construction		Planned plants		Installed and projected capacity	
	Reactors	Megawatts	Reactors	Megawatts	Reactors	Megawatts	Reactors	Megawatts
BULGARIA							10	7,760
Kozloduy	4	1,760	2	2,000	—	—		
Belene	—	—	4	4,000	—	—		
CZECHOSLOVAKIA							16	9,280
Jaslovske Bohunice	4	1,760	—	—	—	—		
Dukovany	2	880	2	880	—	—		
Mochowce	—	—	4	1,760	—	—		
Temelin	—	—	4	4,000	—	—		
GDR							11	5,600
Rheinsberg	1	80	—	—	—	—		
NORD	4	1,760	4	1,760	—	—		
Stendal	—	—	2	2,000	—	—		
HUNGARY							6	3,760
Paks	2	880	2	880	2	2,000		
POLAND							12	9,860
Żarnowiec	—	—	4	1,860	—	—		
WARTA	—	—	—	—	4	4,000		
(Name not designated)	—	—	—	—	4	4,000		
ROMANIA							13	9 ,600
Çernavodă	—	—	5	3,300	—	—		
Moldava	—	—	—	—	3	3,000		
Transylvania	—	—	—		5	3,300		
TOTAL	17	7,120	33	22,440	18	16,300	68	45,860

SOURCES: Official publications of the respective countries.

of the project will probably take 10 years to rectify."[69] That the site has proven to be geologically unstable, thereby creating an "unavoidable need to reinforce the seismic protection," is only one of a complex of problems confronting the builders.[70]

Nuclear power construction in Czechoslovakia suffers from a variety of shortcomings. Primary among them is a shortage of qualified specialists. There also is a lack of skilled blue-collar workers. According to one source, the failure to provide adequate housing, cultural and educational facilities, and other amenities has made it difficult to attract sufficient qualified personnel for work at NPS construction sites.[71]

Bureaucratic infighting and conflicts among key participants in nuclear projects are another major source of delays. There have been "repeated failures" to prevent "fundamental conflicts" among designers, suppliers, and builders, who often "subordinate deadlines, the quality of supplies, and other planned parameters to narrow economic viewpoints."[72] Apparently, such conflicts also have occurred with participating Soviet organizations, thereby necessitating "exacting" discussions between the two sides.[73] The deleterious consequences of these developments include numerous alterations in design at both the planning and project stage, failure to provide requisite equipment and materials to the builders on schedule, and low morale and productivity among the workforce. If an account in *Rudé Právo* is accurate, then construction of NPS's borders on the farcical:

Once upon a time, when they began construction there [i.e., Dukovany], they first laid a foundation stone

[69]*Smena* (Prague), Jan. 11, 1984, quoted in RFE, *Czechoslovakian Situation Report*, No. 2, Feb. 6, 1984.

[70]Another good source on the problems besetting this NPS is *Pravda* (Bratislava), Feb. 22, 1985, in *JPRS-EEI*, No. 036, Mar. 28, 1985, p. 10.

[71]Analyses of these problems include *Hospodarske Noviny*, No. 48, 1985, in *JPRS-EER*, No. 034, Mar. 11, 1986, p. 4; *Planovane Hospodarstvi*, No. 4, 1985, in *JPRS-EEI*, No. 071, Sept. 9, 1985; *Tribuna* (Prague), No. 35, 1980, summarized in RFE, *Czechoslovak Situation Report*, No. 22, Sept. 11, 1980.

[72]See Premier Štrougal's comments in *Rudé Právo*, Sept. 21, 1985, in *FBIS-EEU*, Oct. 1, 1985, p. D/3.

[73]*Rudé Právo*, May 28, 1983, in *FBIS-EEU*, June 7, 1983, p. D/2

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and functionaries descended on the place in nearly 70 cars. Only much later, almost without blueprints, a few dozen people started the building process in earnest. Many of them had been recruited from a local brick kiln factory, which happened to have closed down recently. The first machinery at their disposal they borrowed from the neighboring agricultural cooperative.[74]

Commenting upon these conditions, one Western observer asserts: "More convincingly than any other undertaking, the Czechoslovak nuclear energy program exposes the creeping crisis in the country's neglected economic system."[75]

Responsible officials in Czechoslovakia have voiced similar sentiments. Deputy Premier Ladislav Gerle, the official in charge of the nuclear program, pointed out during "frank and critical deliberations" with representatives of the nuclear power industry the "specific shortcomings" in their work. Sounding very much like Soviet Communist Party leader Mikhail Gorbachëv, he stressed that the only "way out of the situation [is] an increase in the productivity of all participants in the construction and . . . the improvement of organization and management work."[76]

German Democratic Republic. The GDR traditionally has been a leader in the development of nuclear power in Eastern Europe. Its power plant at Rheinsberg was the first commercially operating nuclear facility in the region. Between 1974 and 1979, it placed another four reactors into service at its second NPS at Lubmin on the Baltic Coast (variously referred to as "NORD" or "Bruno Leuschner"). Thus, by 1980, the GDR with 1,840 Mw possessed the largest installed nuclear capacity in Eastern Europe, generating 12 percent of all the electricity produced in that country.[77]

Nonetheless, one should treat with caution the recent assertion of a Western analyst that the GDR is "firmly committed" to the development of nuclear power.[78] After all, Erich Honecker, the general secretary of the SED (communist party), has expressed his personal belief that "atomic energy is not the last word" and that he was pleased that the GDR still relied primarily upon coal for its power.[79] Initial forecasts had projected that the GDR would install an additional 3,520 Mw of nuclear power by 1985[80] (thereby bringing total installed capacity to 5,360 Mw) by commissioning another four reactors at the "NORD" facility and opening a third nuclear power station (called " Stendal" or "Magdeberg"). Furthermore, between 1986 and 1990 the new plant was to be expanded, bringing national nuclear capacity to either 7,120 Mw or 9,360 Mw. Nuclear facilities would then generate as much as 20 to 25 percent of indigenously produced electricity by 1990.[81]

In fact, however, no new nuclear capacities were commissioned between 1981 and 1985, and the percentage of electricity generated by nuclear power actually declined. The 1986–90 state plan now envisions that the "NORD" facility will be "made ready" by 1990 and that the new "Stendal" plant, equipped with two 1,000-Mw reactors, will be "put into operation" in 1991. The plan projects that, by 1990, nuclear power will account for 15 percent of all the electricity produced by East Germany. Thus, at best, the GDR will have 5,600 Mw of installed nuclear capacity by the early 1990's, substantially less than originally projected for that period and only slightly more than its plan target for 1985. Additionally, the share of electricity to be provided by nuclear power in 1990 is significantly lower than the respective figures envisioned by Bulgaria, Czechoslovakia, and Hungary.[82]

Hungary. Hungary has been ambivalent in its commitment to nuclear power. As noted above, its first (and only) NPS—located at Paks, on the Danube River south of Budapest—has its origins in the 1966 agreement with the Soviet Union whereby the latter was to supply two reactors to be made operational in 1975 and 1976, respectively. This agreement was never implemented, however. Then, in 1974, the project was officially resurrected, and the 1966 agreement "modified": Czechoslovakia, not the USSR, would supply the reactors; the capacity of the plant was to be doubled with the installation of four reactors; and the plant was to be eventually expanded to a total capacity of 4,000 Mw. Other projections contemplated bringing a series of 1,000-Mw reactors on line during the 1990's so as to

[74]*Rudé Právo*, Apr. 27, 1984, quoted in RFE, *Czechoslovak Situation Report*, No. 9, May 11, 1984.

[75]RFE, *Czechoslovak Situation Report*, No. 14, Aug. 9, 1983.

[76]*Rudé Právo*, July 19, 1983, in *FBIS-EEU*, July 22, 1983, p. D/2. Premier Štrougal expresses similar sentiments in *Rudé Právo*, Sept. 21, 1985, in *FBIS-EEU*, Oct. 1, 1985, p. D/3.

[77]For background on the development of nuclear power in the GDR, see *Energietechnik* (Leipzig), No. 12, 1983, in *JPRS-EEI*, No. 024, Feb. 23, 1984, p. 32. *Neues Deutschland* (East Berlin), Apr. 12, 1981 in *FBIS-EEU*, Apr. 30, 1981, p. E/17 also provides information on this subject.

[78]RFE, *Background Report*, No. 102, June 25, 1985.

[79]General Secretary Honecker's remarks, made to *Dagens Nyheter* (Stockholm), were reprinted in *Neues Deutschland*, June 25, 1986.

[80]On nuclear plans through 1985, see *DIW Wochenbericht* (West Berlin), Jan. 30, 1986, in *JPRS-EEI*, No. 056, Apr. 11, 1986, pp. 3–7.

[81]On the plans to expand the Stendal plant and on nuclear power through 1990, see *Die Zeit* (Hamburg), Mar. 13, 1981, discussed in RFE, *Background Report*, No. 48, Mar. 11, 1983.

[82]See the plan directives published in *Neues Deutschland*, Apr. 23, 1986, in *FBIS-EEU*, June 10, 1986, p. E/26.

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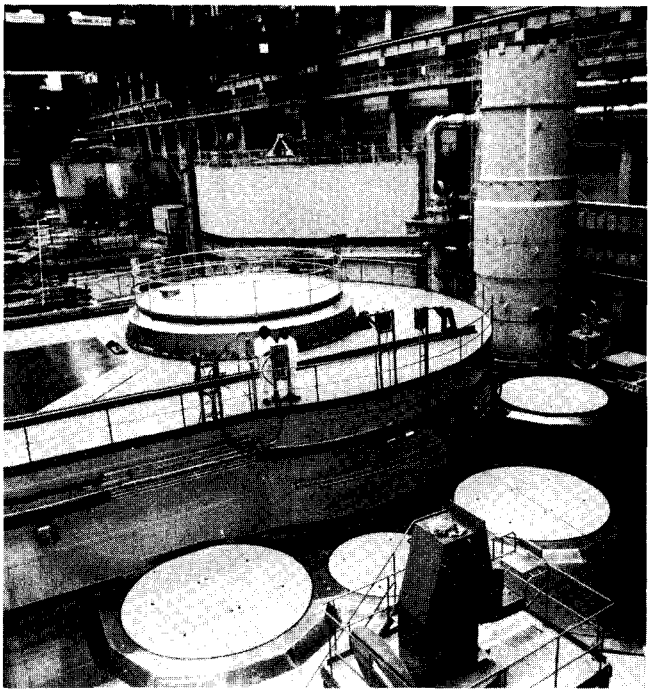

The reactor hall at the Paks Nuclear Power Station in southern Hungary in May 1984.

—Eastfoto.

attain a total installed nuclear capacity of between 15,000 and 20,000 Mw by the year 2000. By that year, nuclear power would generate approximately one-half of all indigenously produced electricity.[83]

Such optimistic projections are rare these days. Indeed, Czechoslovakia's Deputy Premier Gerle has reported that Hungarian officials are making a "certain adjustment of the original program" and are "modifying the concept of the construction of nuclear power plants."[84] Undoubtedly, their experience with making operational the first four reactor units at Paks helped prompt this reassessment. The cost of the project, projected in 1976 at approximately 40 billion forints, now exceeds 75 billion forints, and to date only two of the reactor units have been made operational.[85] In 1985, these two units generated 25 percent of the electricity produced in the country.[86] Hungary now plans to allocate between 25 and 30 billion forints in 1986-90 to bring the other two reactors on line—a sum that exceeds total investment outlays planned for coal mining and approaches those planned for hydrocarbon extraction during this period.[87]

Government agencies had "negotiated a long time" over the future expansion of Paks. Debate revolved around whether there should be any expansion at all, and if so, whether it should involve reactors of 440-Mw capacity or, as originally planned, 1,000-Mw capacity. The debate seemingly was resolved with the announcement in February 1986 that Hungary and the Soviet Union had concluded an agreement for the installation of four more 440-Mw reactors during the 1990's. The reputed advantages of this reactor over its larger counterpart included its lower cost, shorter construction time, and the more limited impact on the national power grid if, for whatever reason, a reactor ceased to operate.[88]

However, future plans for nuclear power again changed with the announcement in August 1986 that the Soviet Union would render Hungary "technical assistance in the design and installation of two power units with 1,000-Mw reactors." The latest projections for nuclear power envision an additional 5,000–8,000 Mw of nuclear capacity (presumably including the two 1,000-Mw reactors at Paks) to be installed by the year 2015 and additional construction of NPS's.[89]

Poland. The saga of nuclear power in Poland has been one of continually frustrated plans, dating back to 1971 when the government first indicated its intention to build an NPS. For many years, Poland was "merely going through the motions" of constructing its first nuclear facility. Then, in 1982, the government suddenly announced—primarily for political reasons, according to one Western source[90]—the intention to build its first nuclear plant at Żarnowiec. Plans call for four reactor blocks with a total capacity of 1,860 Mw, the first to be made operational in 1991, the second

[83]MTI, Jan. 12, 1974, in *FBIS-EEDR*, Jan. 15, 1974, p. F/2; RFE, *Hungarian Situation Report*, No. 10, Sept. 9, 1974. For analysis of Paks development plans, see RFE, *Hungarian Situation Report*, No. 1, Jan. 11, 1983. *Magyar Hirlap* (Budapest), in RFE, *Hungarian Situation Report*, Sept. 9, 1974, provides estimates for nuclear capacities in the year 2000.

[84]*Pravda* (Bratislava), Nov. 15, 1984, in *FBIS-EEU*, Nov. 23, 1984, p. D/3.

[85]RFE, *Hungarian Situation Report*, No. 1, Jan. 11, 1983, provides a detailed analysis of the many problems encountered in making the power blocks at Paks operational. Data on costs overruns at Paks from *Heti Vilaggazdasag* (Budapest), Jan. 11, 1986, in RFE, *Hungarian Situation Report*, No. 5, Mar. 25, 1986.

[86]*Népszabadság*, Feb. 1, 1986, in *FBIS-EEU*, Feb. 13, 1986, p. F/6.

[87]See, *Népszabadság*, Jan. 18, 1986, in *FBIS-EEU*, Jan. 29, 1986, p. F/5

[88]MTI, Jan. 30, 1986, announced that Paks would be expanded with four 440-Mw reactors. The agreement to this end was signed by Soviet and Hungarian representatives on February 4, 1986 as reported in RFE, *Hungarian Situation Report*, Mar. 25, 1986. See *Népszabadság*, Oct. 18, 1985, in *JPRS-EEI*, No. 094, Dec. 12, 1985, p. 76, for information regarding debates on the future expansion of Paks.

[89]*Izvestiya*, Aug. 16, 1986, reports the agreement for 1,000-Mw reactors. Data on projections for nuclear power by 2015 from *Magyar Hirlap*, Oct. 31, 1986, in *FBIS-EEU*, Nov. 14, 1986, p. F/5.

[90]RFE, *Polish Situation Report*, No. 13, July 27, 1982, argues that "it is not possible to escape the feeling . . . that this projection is . . . merely intended to show the general public that the authorities are launching useful projects in the best public interest, even if their feasibility seems rather doubtful."

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and third by 1993 and 1994, and the fourth in "the late 1990's."[91] Czechoslovakia is to supply the reactors, and other socialist states, including the USSR, are to extend aid. But Poland is producing—in part with assistance from Western firms—much of the requisite equipment. Domestic manufacture is to entail "dozens of projects" never before attempted by Polish industry, including the construction of a 500-Mw turbo-generator designed under license from the Swiss firm BBC, which will be the largest electrical machine ever built in Poland.[92]

Poland also has announced plans to begin construction, in 1987, of a second NPS (named "WARTA") to be equipped with four Soviet-built 1,000-Mw reactors. The first reactor there is to come on line in 1994, and the entire project is to be completed by 2000. This plan is already embroiled in controversy. The proposed site of the plant, a heavily industrialized, urbanized, and polluted region between Płock and Włocławek, has engendered "fierce disputes," attributed by one ranking official to a "Hiroshima complex" that deeply rooted in Polish society.[93]

Finally, officials have spoken about making a third NPS operational by the year 2000. Reportedly, this plant, to be located on the Vistula River, would have four 1,000-Mw reactors and not only generate electricity but also supply heat to nearby communities, including Warsaw. Critics have assailed the project as "rash and frivolous," charging that the planners "did not deem it necessary to support their idea with verified and reliable economic calculations," and questioning the ecological impact that it will have on the Vistula River.[94]

If all of these plans were to materialize, then Poland would have 9,860 Mw of installed nuclear capacity by the turn of the century. Yet, Polish sources themselves concede that these plans probably cannot be realized; installed capacity is now projected at 7,760 Mw, but is unlikely to exceed 4,000–5,000 Mw by the year 2,000.[95] To realize even these more modest targets will require that Poland overcome formidable technological, fiscal, and political obstacles.

Romania. As one Western observer put it, "Romania's nuclear energy program displays more than a few features verging on the absurd."[96] These include the supervision of the program by members of the Ceauşescu family who possess no appropriate scientific or technical training for this task, the promulgation of completely unrealistic targets that are never fulfilled and are repeatedly revised without explanation, and groundless claims about Romania's ability to produce nuclear equipment, including nuclear weapons, for domestic use and for export. An unusual feature of the Romanian program—which some also might label as absurd given Romania's fiscal crisis—is the fact that technology from capitalist countries plays a key role in its realization.

As noted, targets for nuclear capacity in Romania have varied widely (one researcher has identified 14 different projections in the official press). The latest available estimate envisions an installed nuclear capacity of 4,500 Mw by 1990 and 9,600 Mw by 2000.[97] To date, of course, Romania has not commissioned any nuclear energy stations, and the realization of any of these targets remains uncertain.

In 1970 and 1982, Romania concluded agreements with the Soviet Union for the construction of NPS's. Little information is available on the 1970 agreement for the construction of an NPS equipped with (probably two) Soviet-supplied 440-Mw reactors, which was to be made operational by 1978. However, there is rumor that the Romanian-built foundation for the first reactor cracked during the 1977 earthquake, and, most likely, the project has now been abandoned.[98]

According to Romania's 1982 agreement with the USSR, the Soviet Union was to supply three 1,000-Mw reactors for the "Moldova" plant to be located in Romania's northeastern province of Moldavia. Although little has been heard about the project, a Hungarian source reported in 1986 that the plant would be built near Piatra Neamt and that the builders "would like" to have the first block operational by 1990. Another source now indicates that Czechoslovakia will supply two reactors for the project; it is unclear if this means that the project has been scaled back from three to two reactors or whether the USSR will simply supply the third reactor.[99]

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[91]For background on the Żarnowiec project, see *Komsomolskaya Pravda* (Moscow), Aug. 28, 1985; Warsaw Domestic Service, Apr. 14, 1983, in *FBIS-EEU*, Apr. 15, 1983, p. G/3; RFE, *Polish Situation Report*, No. 13, July 27, 1982.

[92]On the role of domestic manufacture—and the problems encountered therein—see, *Trybuna Ludu*, Nov. 14, 1985, in *JPRS-EER*, No. 036, Mar. 13, 1986, p. 74.

[93]*Życie Warszawy*, Oct. 18, 1985 in *JPRS-EER*, No. 025, Feb. 25, 1986, p. 38; *Życie Gospodarcze* (Warsaw), Aug. 26, 1984, in *JPRS-EEI*, No. 112, Oct. 5, 1984; *Rzeczpospolita*, May 3, 1984, in *JPRS-EEI*, No. 060, May 24, 1984, p. 45.

[94]*Tygodnik Powszechny*, July 27, 1986, in *FBIS-EEU*, Aug. 12, 1986, p. G/5.

[95]*Życie Warszawy*, Oct. 10, 1983, in *JPRS-EEI*, No. 84875, Dec. 5, 1983, p. 31. The projection of 7,760 Mw of installed nuclear capacity by the year 2000 was announced at the conclusion of the 1986 session of CEMA in Bucharest. PAP, Nov. 5, 1986, in *FBIS-EEU*, Nov. 5, 1986, p. AA/11.

[96]See RFE, *Background Report*, No. 129, Nov. 8, 1985.

[97]Ibid. collates a variety of official estimates for nuclear power capacities. See *Agerpres* (Bucharest), July 9, 1985, in *FBIS-EEU*, July 11, 1985, p. H/5, for the latest official estimate of these capacities through the year 2000.

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Romania also concluded an agreement with Canada, in 1977, for the supply of reactors and other requisite equipment, becoming the first and, thus far, the only Warsaw Pact state to reach such an agreement with a Western country. In 1978, Canada extended a US$1-billion credit to Romania for the purchase of the four 660-Mw Canadian-made reactors to be placed near the town of Çernavodă on the Danube River. The purchase was to be part of a larger deal whereby Romania would acquire an additional 12 reactors by the year 2000, some manufactured entirely by Canada and others by Romania under Canadian license. Romania also awarded to an Italian-American consortium a $320-million contract (backed by a $120-million credit from the United States government) to provide turbine generator sets and other equipment for the Çernavodă project. The first reactor at Çernavodă was to become operational in 1985, and the entire project was to be completed by 1990. Eventually, Romania hoped to become self-sufficient in the production of reactors and even to export reactors to Third World countries, paying Canada for the license to do so.[100]

Prospects are minimal that the Romanian-Canadian nuclear deal will be extolled as a model in East-West trade. To date, none of the reactor blocks at Çernavodă are operational and despite assurances by Canadian officials that they have an "interest" in "stepping up efforts" to commission these facilities ahead of schedule, it remains unclear when (or if) they will start up.[101] Fiscal considerations are a primary factor here. Romania has been unable to utilize fully its $1 billion line of credit from Canada because it possesses insufficient hard currency which Canada demands as a primary form of repayment for its loan. Inflation has eroded much of the value of the original credit so that it now would barely cover the purchase of two, rather than the originally projected four, reactors.[102]

Despite these setbacks, Romanian officials now say they are contemplating expanding the Çernavodă plant to five power blocks. There is even talk about cooperating with Canada in the building of another nuclear power facility.

Prospects

Nuclear power in Eastern Europe is currently entering a third stage of development, one that will prove crucial in determining its status well into the next century. The first stage—dating from the 1955 announcement of the USSR that it would assist its East European allies in establishing national nuclear programs until roughly 1970—began with grandiose dreams in several states, notably in Czechoslovakia, but ended in disappointment, frustration, and recriminations. The second stage of development, spanning the decade of the 1970's and extending into the early 1980's—and hence coinciding with the tremendous increase in world energy prices—saw most countries of the region place NPS's into commercial operation and all of them make plans for a substantial augmentation of their nuclear capacities. The difficulties encountered in implementing these plans—difficulties, it should be stressed, not unique to Eastern Europe—clearly have sobered decision-makers as they enter the current stage of nuclear development, where they must make hard choices regarding the almost 40,000 Mw of nuclear capacity either contemplated or under construction.

Economic considerations will be of primary importance in their deliberations. As we have seen, expenditures on nuclear facilities (almost invariably far higher than initially estimated) have consumed huge amounts of investment resources. According to a Czechoslovak economic newspaper:

A very detrimental effect on the entire economy is recorded by the constantly growing volume of investment costs per unit of output in nuclear power plants which currently limits the possibilities to make investment in other areas, even in the fuels and energy industry itself.[103]

If anything, expenditures on nuclear power are likely to increase in the future as funds are allocated to dispose of ever greater amounts of nuclear waste, to

[98]For background on this project, see Radio Bucharest, Mar. 24, 1974, discussed in RFE, *Romanian Situation Report,* No. 28, Dec. 7, 1978; RFE, *Background Report,* No. 165, Aug. 18, 1982, and No. 129, Nov. 18, 1985.

[99]Radio Moscow, Sept. 9, 1982, reported the signing of this agreement. The Hungarian press report on the project is in *Magyar Hirlap,* Jan. 14, 1986, in *FBIS-EEU,* Feb. 4, 1986, p. H/1. Radio Prague, May 16, 1985, reported on participation by Czechoslovakia in the project. RFE, *Romanian Situation Report,* No. 5, March 13, 1985, provides background material on the subject.

[100]Radio Bucharest, Oct. 25, 1977, carries the announcement of the agreement. The agreement is analyzed in detail in RFE, *Romanian Situation Report,* No. 33, Nov. 9, 1977. See also, *Agerpres,* Sept. 9, 1981, in *FBIS-EEU,* Sept. 10, 1981, p. H/1; RFE, *Background Report,* No. 165, Aug. 18, 1982. On the role of Italy and the United States in the Çernavodă project, see *The Financial Times* (London), Mar. 3, 1981, and *The Wall Street Journal* (New York), Aug. 27, 1982, p. 20.

[101]*Agerpres,* July 9, 1985, in *FBIS-EEU,* July 11, 1985, p. H/1, informs about Canadian interest in speeding up work in the project.

[102]For details of these fiscal arrangements, see RFE, *Romanian Situation Report,* No. 15, 1985.

[103]*Planovane Hospodarstvi,* No. 4, 1985, in *JPRS-EEI,*No. 071, Sept. 9, 1985, p. 21.

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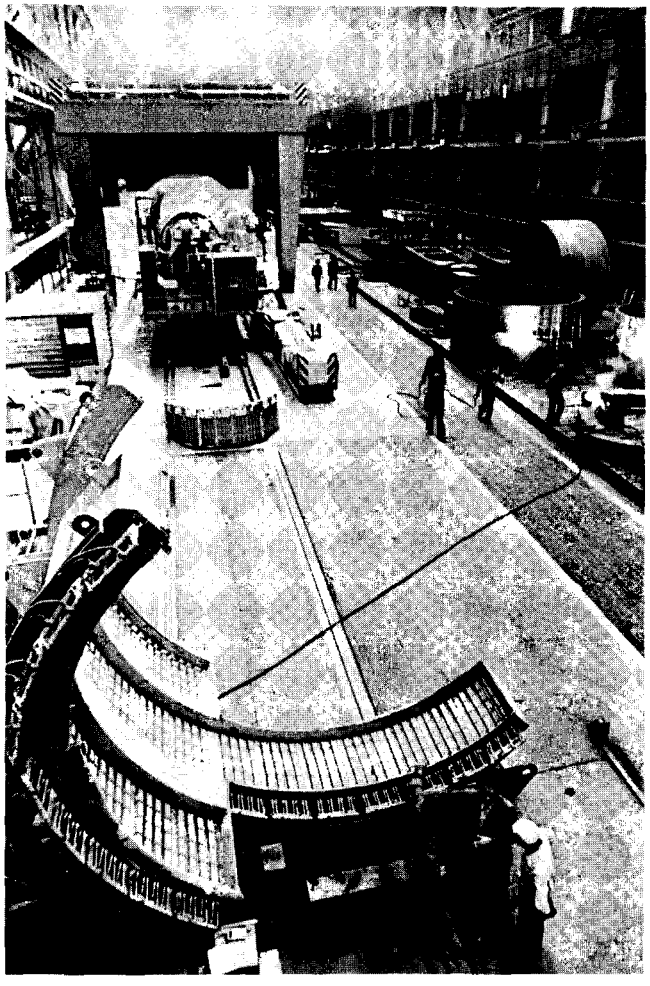

Parts of a nuclear power assembly seen at one of the production areas of the "Atommash" plant at Volgodonsk in the USSR.

—TASS from Sovfoto.

purchase nuclear fuels as indigenous reserves of uranium become depleted, and to acquire the equipment and materials necessary to enhance the safe operation of nuclear facilities. Already, fiscal constraints have so hampered the nuclear programs in Poland and Romania that one wonders if these countries will ever commission commercially operational NPS's. Fiscal concerns have made the future of nuclear power in Czechoslovakia "an open question for some time yet" and have led to adjustments of nuclear programs in the GDR and Hungary.[104] If world oil (and other energy) prices continue to decline, or even stabilize at or near existing levels, then arguments challenging the cost-effectiveness of nuclear power will become more compelling.

Enhanced concern for safety also will affect the deliberations of decision-makers. Muted manifestations of such concern were evident among officials even before the accident at the Chernobyl' nuclear power plant. In one of the most famous examples of such concern, two scientists were permitted to publish an article in the authoritative Soviet journal *Kommunist* in 1979, questioning (prophetically as it turned out) the wisdom of locating nuclear facilities close to or—as in the case of nuclear heating plants—even within the limits of densely populated urban centers.[105] Obviously, Chernobyl' has heightened these concerns among both the elites and the masses: concern for safety reputedly prompted Poland to halt temporarily construction at Żarnowiec, the GDR to construct a containment vessel for a nuclear reactor for the first time, and other regimes to undertake well-publicized steps to prevent future nuclear mishaps.

All these efforts notwithstanding, doubts about the safety of nuclear facilities in the region persist. In part, the problem is one of economics. Regimes which already are severely strained by the fiscal demands of nuclear programs may be unwilling—or unable—to muster the huge additional sums necessary for requisite safety measures. Then, too, as Chernobyl' graphically illustrated, the human element can compromise even sophisticated safety systems. Here the absence of autonomous public institutions to monitor the behavior of nuclear personnel may exacerbate the seemingly universal tendency to cover up mishaps and may impede efforts to prevent their re-occurrence. As a member of the Polish Academy of Sciences has forcefully argued, the "great weakness" of nuclear safety measures in "our country is rooted in the extensive and long-standing practice of concealing and falsifying breakdowns and accidents as well as their circumstances and results." He continues:

No public analyses, investigations, and trials take place, and no real causes and truly guilty people are disclosed. This situation is made worse by the ineffective and deceptive system of information and

[104]As a Czech source explains, "even though all the strength of the national economy will have to be mobilized . . . the scope of electricity production in nuclear plants will for a long time remain an open problem." *Planovane Hospodarstvi*, No. 5, 1981, quoted in RFE, *Czechoslovak Situation Report*, No. 12, June 29, 1981. Enhanced safety measures in the building of NPS's taken in the wake of the Chernobyl' disaster also will be costly; e.g. a Soviet official reports that they will increase the cost of building Soviet nuclear plants by approximately 40 percent. Reuter (Bonn), Oct. 17, 1986. Furthermore, the greater demand for enriched nuclear fuel from the USSR, attendant upon expanded nuclear facilities, will result in a "fast growth of demands on counter-deliveries" in payment. *Tribuna*, July 2, 1986, in *JPRS-EEI*, No. 148, Oct. 1, 1986, p. 1.

[105]*Kommunist* (Moscow), No. 14, 1979.

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public warnings, a thing that has often created great trouble.[106]

Finally, the system of economic planning in communist Eastern Europe, with its emphasis on production, to the detriment—if not exclusion—of other objectives, may also compromise nuclear safety. Thus, the chief inspector for nuclear safety of the Czechoslovak Commission for Atomic Energy, responding to a question about whether nuclear plant personnel circumvent safety procedures in their efforts "to ensure production tasks," replied: "Certain tendencies actually do exist. In operations this mainly applies to shortening the shut-downs of blocks. Attempts are made to accumulate or leave out some controls as a result."[107]

Ironically, even after Chernobyl'—and the extensive contamination of the environment that ensued—concern for environmental quality may remain one of the strongest rationales *for* nuclear power in Eastern Europe. Admittedly, statements such as that of a ranking nuclear official in Czechoslovakia that nuclear power "unavoidably" necessitates that "some parts of the country will have to be more or less devastated"[108] are hardly reassuring to environmentalists. Yet it is equally true that most forms of energy production entail some pollution of the environment, and that those based on solid fuels—particularly soft coal and lignite, so widely used in Eastern Europe—are especially harmful. On balance, then, while nuclear power may not be a miraculous cure for environmental degradation in Eastern Europe, it may, nevertheless, prove more "friendly" (as a proponent of nuclear power once phrased it) to the environment than any other readily available source of energy production in the region.

However these issues are finally (if ever) resolved, nuclear power appears likely to remain an important, though probably not the decisive, component of the energy balance in the region for the foreseeable future. This applies especially to Bulgaria and Czechoslovakia and, to a lesser extent, the GDR and Hungary. On the other hand, the future of nuclear power seems much more problematic in Poland and Romania. In any case, events exogenous to the region—in particular, another world oil crisis that would drive up the price of petroleum and other fuels—could well alter this somewhat pessimistic prognosis and make the atom, as many of its proponents once assumed it would be, the key to the region's energy future.

[106] *Tygodnik Powszechny*, July 27, 1986, in *FBIS-EEU*, Aug. 12, 1986, p. G/5.

[107] *Tribuna*, Oct. 29, 1986, in *FBIS-EEU*, Nov. 13, 1986, p.4. This official notes that the Presidium of the Federal Government has prohibited the "unjustified and unsubstantiated shortening of approved operational procedures." Apparently, the prohibition has not proven effective, because he adds that "it would help if the realization of this decision were supported by some incentive measures directly in power plants."

[108] *Rudé Právo*, Feb. 16, 1983, as quoted in RFE, *Czechoslovak Situation Report*, No. 11, June 24, 1983, carries the comment of the Czechoslovak nuclear official.

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China's Opening to the World

Huan Guocang

As the centerpiece of a plan designed to open China to the international community, China's "open door" policy was intended to expand China's foreign trade, introduce foreign technology and culture into Chinese society, attract overseas investment, and send a large number of students to developed countries for study and training. This would in turn, it was hoped, strengthen China's position in international labor and financial markets and enable it to become more actively involved in various international economic organizations and, gradually, to integrate the Chinese economy into the world economy as a whole.

During the last quarter of 1984 and the first quarter of 1985, however, China's "open door" policy suffered a number of serious setbacks. The rapid increase in imports of both production and consumer goods produced large deficits in China's foreign trade, and the nation's foreign exchange reserves dropped drastically, falling one-third within six months.[1] This weakened the central government's control over the expenditure of foreign exchange in particular and the conduct of foreign trade in general.[2] While those enterprises that specialized in imports continued to make huge profits (with some notable exceptions, such as the energy and chemical industries), about 80 percent of the enterprises that produced mainly for export continued to lose money.[3] Indeed, according to one Chinese economist, for the first quarter of 1985, China's degree of Trade Bias averaged only about 0.5, some 50 percent lower than that of most developed market economies.[4]

China's "opening to the outside world" also encountered problems of a somewhat different nature. For one thing, as Chinese enterprises competed with one another for both domestic and international markets, many imported projects became "redundant" and thus wasteful. For another, in general, imports of technology were neither well planned nor based on careful cost-benefit analyses. As a result, many projects became excessively dependent on imported parts and other supplies from overseas.[5] Moreover, China's limited domestic market and Chinese exporters' restricted access to the international market exacerbated these difficulties.

Not surprisingly, in the wake of such difficulties, some Chinese leaders and economists directed strong criticisms at what were then the primary vehi-

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[1] John Stuermer, "The Foreign Exchange Situation," *China Business Review* (Washington, DC), January-February 1986, pp. 14–17.

[2] Zhang Weiying and Li Jiange, "The Proposal of Depreciation of the Renminbi and Opening of the Market of Foreign Exchange," *Jingji Tizhi Gaige Yanjiu Baogao* (Research Reports of Economic System Reforms), No. 6, Beijing, The China National Institute of Economic System Reform of the State Council, 1985, pp. 1–18 (hereafter *Yanjiu Baogao*).

[3] Research Team on Foreign Exchange and Foreign Trade, "On China's Policy of Development of Foreign Economic Relations and Foreign Trade During the Seventh Five-Year Plan," (The Main Report), *Yanjiu Baogao*, No. 11, 1985, p. 2; and *Yatai Jingji* (Fuzhou), No. 4, 1985, pp. 40–42.

[4] See Huang Fangyi, "On Constraining Elements to Our Country's Import of Technology and Foreign Trade and Suggestions on Improvement," *Jingji Yanjiu* (Beijing), No. 12, 1985, p. 22. Trade Bias (B) is calculated according to the following formula:

$$B = \frac{Pdm/Pfm}{Pdx/Pfs}$$

where Pdm = Domestic prices of imported goods; Pfm = International prices of imported goods; Pdx = Domestic prices of exported goods; and Pfx = International prices of exported goods.

[5] See e.g., Cao Jiarui, "The Current Situation and Problems of China's Importation of Technology (I)," *Liaowang* (Beijing), May 5, 1986, pp. 14–15.

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cles of the "open door" policy—the four experimental Special Economic Zones (SEZ's) and Hainan District, which had been expressly created by the government to attract foreign investment as well as advanced technology, equipment, and management expertise (see map on p. 62).[6] Virtually none of the SEZ's had been able to balance its international payments,[7] and all had depended heavily on the central government's supply of foreign exchange, which was fixed at the official rate.[8] With the exception of the Shantou SEZ and the Shekou Industrial Zone (a part of the Shenzhen SEZ), the zones had exported less than one-third of their industrial production.[9] According to these critics, the share of the nonindustrial sector in the SEZ's total Gross National Product (GNP) was "too high."[10] And, contrary to expectations, the SEZ's did not attract much "advanced" technology to China, nor did they strengthen China's position in the international market. Rather, noted the critics, they provided the "back door" through which foreign corporations entered and occupied China's domestic market free of charge and through which Western values and culture spread rapidly among Chinese youth.[11] The SEZ's and Hainan District, they said, were thus the primary source of "economic crimes" and corruption. The central government, in response, quickly tightened its control over the four SEZ's and Hainan District. [See the Note by Joseph Fewsmith in this issue—Eds.]

Meanwhile, foreign investors began to complain of increasing difficulty in doing business in China. Office rents were raised to excess, they said, and the process of business negotiations was too protracted and too expensive. Moreover, the Chinese government's frequent policy shifts made it increasingly difficult for foreign investors to make long-term investment plans and commitments to the Chinese market. For example, under new regulations adopted by the central government in March 1985, which mandated that all foreign-involved enterprises balance their international payments,[12] many Chinese enterprises had to break their contracts with their foreign counterparts. Other serious problems arose around the obstacles to entering the Chinese market and to converting profits from Chinese Renminbi (RMB) into hard currencies through the Bank of China. This occurred in spite of the government's promise to facilitate such currency conversions through the "Law of the People's Republic of China Concerning Joint Ventures Using Chinese and Foreign Capital," which had been adopted in July 1979.[13]

China's newly established tourist industry came under attack as well. Foreign tourists often complained about the poor quality of service and facilities and the high price of traveling and staying in China, although the number of international tourists who visit China continues to increase. Moreover, the policy of limiting contact between Chinese citizens and foreign tourists and of charging foreigners different rates—higher for some goods and services; lower for others—made many foreign tourists uneasy.[14] These policies have also rekindled stong nationalist sentiment in China and thus have created tension between the government and Chinese society.

The continuing worldwide recession has further jeopardized the international environment within which China has adopted its "open door" policy. The protectionist policies in many developed countries directed against both newly industrialized countries (NIC's) and developing countries have hurt China's exports. Consequently, Chinese officials have begun to complain about the difficulties Chinese goods have had entering the market in developed countries, notably Japan, with whom China's trade deficit was US$6.1 billion in 1985. Calculations by the Chinese government project a 1986 deficit of approximately US$3 billion.[15]

Serious constraints have also emerged impeding China's efforts to expand its export of labor, as the major market for these services, the oil-rich states of the Middle East, experienced economic setbacks resulting from the recent decline in oil prices throughout the world. In addition, the recent recession in Hong Kong, China's largest trading partner and the source of a large trade surplus for China, has reduced significantly that city's imports from the People's Republic of China. Furthermore, the competition between China and other Asian countries for the international market in manufactured goods has become increasingly intense; and other developing countries have complained about China's aggressiveness in such international financial organizations as the World Bank and

[6]At the Third Plenum of the 11th Central Committee of the Chinese Communist Party (December 1978), Deng Xiaoping proposed the "open" policy. In September 1979, the Central Committee and the State Council issued a joint document calling for the establishment of "special zones" in Shenzhen, Shantou, Zhuhai, and Xiamen. In May of the following year, another joint CC/State Council document formally designated these four zones as "Special Economic Zones."

[7]Chen Zhaobing, "On Some Criticism of Special Economic Zones," *Xueshu Yanjiu* (Guangzhou), No. 4, 1985, pp. 44–48; *Jingji Yu Guanli Yanjiu* (Beijing), No. 6, 1985, pp. 44–48; and *Fujian Luntan* (Fuzhou), No. 9, 1985, pp. 21–23.

[8]Zhang and Li, loc. cit., pp. 9–10.

[9]Huang Lijun, "China's Special Economic Zones at a New Stage of Development," *Yatai Jingji*, No. 5, 1985, pp. 43–46.

[10]*Renmin Ribao* (Beijing), Aug. 9, 1985, p. 5.

[11]Zhang Ge, "On Several Issues of the Special Economic Zones and Coastal Open Cities," *Fazhan Yanjiu* (Beijing), No. 2, 1985, pp. 22–24.

[12]*Liaowang*, July 21, 1986, pp. 10–11.

[13]Ibid., June 2, 1986, pp. 8–9.

[14]*Shijie Jingji Daobao* (Beijing), Apr. 4, 1986, p. 11.

[15]Ibid., Mar. 10, 1986, p.1; and *China Daily* (Beijing), May 28, 1986, p. 1.

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the International Monetary Fund (IMF), as well as in international financial markets.[16]

In trying to reverse these setbacks, the Chinese government has made a serious effort to adjust its "open door" policy. It has approached other international players, both public and private, for mutual understanding and cooperation in an attempt to improve China's standing within the international community. From a preliminary examination, it appears that the government's recent efforts at readjustment have in the main been effective, although many serious problems remain. This essay examines these efforts and tries to place them in domestic and international perspective. Of particular concern is the process by which the government has adjusted its "open door" policy and the successes and failures of that policy to date. Finally, this essay will evaluate the source and nature of the problems that persist and suggest what remains to be done in order to make the "open door" policy more effective in the years ahead.

China's Foreign Trade Policy

During the past two years, the Chinese government has adjusted its foreign trade strategy substantially, steadily decentralizing decision-making for exports, while tightening control over imports. As part of this policy, the government has encouraged local authorities and enterprises, as well as private individuals, to conduct export business directly with foreign corporations.[17] Accordingly, the key task of the Ministry of Foreign Economic Relations and Trade and its local branches is no longer to control the export business, but rather to serve as intermediaries between the international market and Chinese enterprises by providing information and advice. Almost all provincial governments have been encouraged to set up their own trade representative offices abroad, and their business operations have, as a consequence, become more independent of the central government.

Chinese officials have also readjusted the mix of China's exports, and these changes seem likely to continue. Largely because of the recent decline in oil prices in the international market, the Chinese government has reduced its export of oil proportionately; once 23 percent of China's total exports (during the Sixth Five-Year Plan, 1981–85), oil exports now equal less than one-fifth of that total.[18] In addition, the rapid

Ingots produced through an electrolysis process at the Guizhou Aluminum Plant using equipment imported from Japan.

—Eastfoto.

increase in agricultural production during the past few years has allowed the government to expand exports of farm commodities, especially of grain and cotton.[19] Moreover, the Chinese government has begun to place great emphasis on increasing its export of manufactured products, especially machinery and consumer goods.[20]

The government has therefore striven to increase the number of enterprises that produce for the international market.[21] These "exporting bases" have, accordingly, received considerable technology and financial investment, as well as financial assistance in the form of subsidies and low tax rates, from the central government in order to develop their specialties and strengthen their competitive posture in the international market. And, as part of its effort to expand exports at the local level, the central government has continued to allow provincial authorities to retain 17.5 percent and enterprises 12.5 percent of the total foreign exchange earned.[22]

Another significant step taken has been the government's move to depreciate the RMB. The most recent devaluation took place in July 1986, when the RMB was directly depreciated by 15.8 percent.[23] Moreover,

[16]These sentiments were expressed to me during interviews with some officials of the World Bank in August 1985.

[17]*Liaowang*, Mar. 10, 1986, pp. 12–13.

[18]Ibid., May 26, 1986, p. 7.

[19]Song Guoqing, "An Analysis of the Present Situation of Grain Supply and Demand and China's Foreign Trade," *Yanjiu Baogao*, No. 3, 1985, pp. 1–12.

[20]Jun Kuo, "Chinese Economists Discussing the Strategy of Foreign Trade," *Liaowang*, Mar. 31, 1986, pp. 7–8; and *Shijie Jingji Daobao*, Mar. 31, 1986, p. 5.

[21]*Renmin Ribao*, May 6, 1986, p. 1.

[22]Research Team of Foreign Exchange and Foreign Trade, loc. cit., p. 13.

[23]Ibid., pp. 15–20; and *Renmin Ribao*, June 12, 1986, p. 3.

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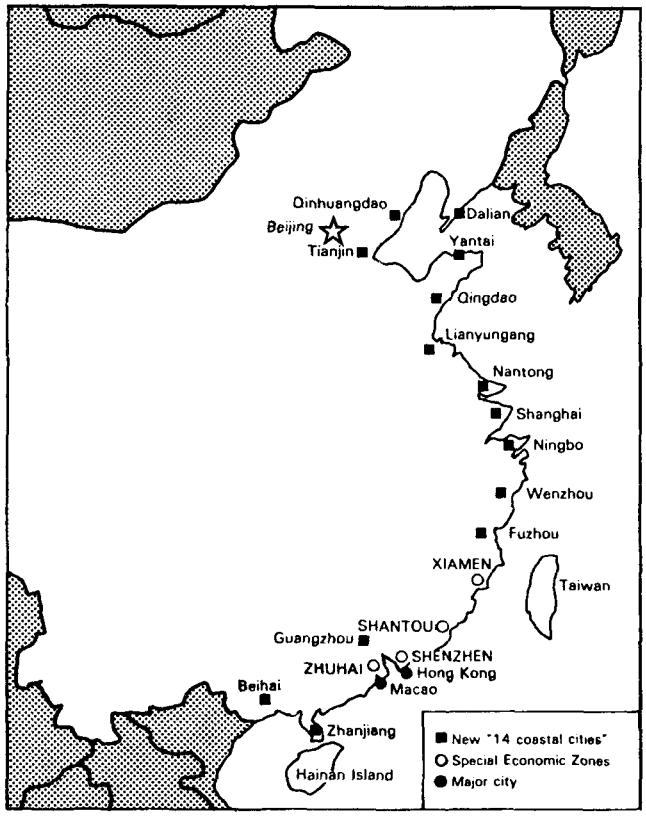
The Special Economic Zones and Open Cities of China



—Adapted from a map in Michael Oborne, *China's Special Economic Zones*, Paris, Development Centre of the OECD, 1986, p. 185.

the government's efforts to reform China's domestic price structure,[24] as well as other aspects of Chinese economic and financial institutions, including the country's system of management, have further reduced both the existing price gap between the Chinese domestic market and the international market and the institutional gap between the Chinese economy and market economies.

A more important step, however, has been the government's efforts to link the readjustment of its foreign trade strategy with the simultaneous reform of domestic economic institutions and introduction of foreign technology and investment. In spring 1985, for example, Premier Zhao Ziyang clearly indicated that the basic development strategy of China's coastal areas (which account for about 60 percent of China's total industrial capacity) should stress *"Mao-Gong-Nong,"* that is, foreign trade-industry-agriculture.[25] This is intended not only to give the highest priority to an expanding foreign trade, but also to develop close coordination between these three sectors. Moreover, to take advantage of China's rich human and natural resources and to develop export-oriented manufacturing, industry has been heavily emphasized in all SEZ's and in "open" coastal cities and surrounding areas.

International financial markets. No trade strategy would be complete, however, without the securing of international financing. For this reason, during the past two years, China has strengthened its working relationship with the World Bank, IMF, and other international financial, economic, and scientific and technological organizations. It became a member of the Asian Development Bank in May 1986 and of the General Agreement on Tariffs and Trade (GATT) in October that same year. Because of its steady progress in reform, its continued opening up to the international community, its relatively steady economic growth during the past few years, and improvement in its political ties with Western countries, China is in a better position than most other developing countries to receive aid from the World Bank. Indeed, the World Bank has been a continuing source of financial and technological aid to China. Together with the IMF, the Bank, which opened an office in Beijing in the fall of 1985, has also played a significant role as consultant to the Chinese government concerning long-term development strategy and individual policy issues. Both the IMF and the World Bank, moreover, have expanded their training programs for Chinese senior officials.

Apart from receiving financial aid and concessional loans from international organizations and foreign governments, China has also obtained commercial loans and issued bonds in the international financial market. This new policy has allowed a number of quasi-governmental business institutions to borrow money from abroad.[26] In 1985, for example, China issued abroad some US$600 million in bonds.[27] In addition, the Bank of China has arranged for local authorities and enterprises to obtain commercial loans from foreign banks.

The competition has intensified between China and other developing countries for the limited financial resources available from international financial and

[24] In April 1986, the National People's Congress, constitutionally China's highest organ of state power, passed the Seventh Five-Year Plan, which among other things proposed to further China's price reform. The objective of this reform is to establish a new price system by which the market is the primary determinant of prices. Under the new system, the central government would control the prices of only a handful of "key" goods. For a discussion of the price reform, see *Liaowang*, Mar. 24, 1986, pp. 1–2; and June 16, 1986, pp. 13–14.

[25] *Shijie Jingji Daobao*, Jan. 13, 1986, p. 2, and Mar. 10, 1986, pp. 1–2.

[26] *Liaowang*, Apr. 14, 1986, pp. 8–9.

[27] Ibid., Jan. 20, 1986, p. 6; *Renmin Ribao*, June 15, 1986, p. 3; and Elizabeth Morrison, "Borrowing on World Bond Markets," *China Business Review*, January-February 1986, p. 18.

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economic organizations and in the international financial market place. This is largely due to three factors: (1) the recent worldwide recession, which has hurt most developing countries' economic growth; (2) high interest rates in the United States, which continue to attract capital flow from the international market; and (3) the decline in oil prices, which has led the OPEC states to borrow money abroad. But even if China cannot balance its international payments, the IMF will likely provide it with financial support—a likelihood that has evinced increasingly strong complaints from other developing countries. Such complaints may ultimately affect decision-making in both the World Bank and the IMF, as China has only limited influence within the policymaking bodies of both organizations.[28]

Exploring new markets. Facing a rapidly increasing pattern of protectionism throughout the international community, especially in industrial market economies, the Chinese government, working through diplomatic channels, together with other developing countries and NIC's, has openly urged the Japanese and US governments to reduce trade barriers against Chinese goods and to open further their own markets.[29] These efforts have been made in conjunction with the Chinese government's policy of building close political ties with these two countries. China has, in addition, actively sought new markets for its exports, initiating and investing in joint-venture projects overseas[30] and sending a large number of delegations to open-trade exhibitions around the world.

China has redoubled its efforts to enter the market of the Soviet bloc, signing long-term trade and technology transfer agreements with the Soviet Union and a number of East European countries. One important reason for this is that much of the trade between China and the Soviet bloc can be conducted in kind, without the exchange of hard currency. Such trade, moreover, does not require an institutional mechanism capable of ensuring a quick response to the dynamics of international trade. Thus, the Chinese can get low-level technology and equipment from Soviet-bloc countries in exchange for agricultural products and low-quality consumer goods, which are difficult to sell in the West. Even though China continues its efforts to import high technology from the industrial world, it is still a huge market for Soviet-bloc technology and industrial equipment, which are comparatively inexpensive and easier to operate than those from Japan, Western Europe, and the United States. More important, perhaps, China needs replacement parts to refurbish and upgrade the 156 large-scale industrial projects it imported from the Soviet bloc during the 1950's.[31]

A coal terminal at the open port city of Qinhuangdao in northern China, capable of servicing 50,000-ton ships.

—Gamma-Liaison.

The Chinese government has also given considerable attention to strengthening its position in the Asian market (notably in Hong Kong) and to exploiting new markets in Africa, the Middle East, and Latin America. In particular, the government has endeavored to export low-technology machinery, tools, and agricultural equipment, from which China can take certain comparative advantages in the international market.[32]

In order to reduce trade deficits, the Chinese government has tightened its control over foreign exchange expenditures. It has reduced imports, especially of consumer goods and automobiles, and, as a part of its general economic strategy, has strengthened its control over the flow of money and capital investment. As a result, both the scale of national investment and the demand to import technology and equipment have been reduced. Although local authorities and enterprises still retain part of the foreign exchange they earn, the central government, through the Bank of China (China's foreign-exchange reserve bank) and the Ministry of Foreign Economic Relations and Trade, now plays a key role in reviewing and sanctioning import requests. The central government also recently decided to open a foreign exchange market in China in order to collect foreign exchange held by enterprises and by individuals, who since

[28]At the International Monetary Fund, for example, there are no professional staffs from the People's Republic of China in any research divisions. At the World Bank, the number of Chinese professionals is small.

[29]*Beijing Review*, June 16, 1986, p. 31, and *Renmin Ribao*, May 15, 1986, p. 1, May 29, 1986, p. 1, and June 6, 1986, p. 1.

[30]*Liaowang*, May 21, 1986, pp. 6–7.

[31]*China Business Review*, March-April 1986, pp. 53–54.

[32]Zhou Hualang, "China's Trade Ties with ASEAN," *Liaowang*, Mar. 24, 1986, p. 28; and *Renmin Ribao*, June 14, 1986, p. 1.

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1984 have been allowed to maintain foreign exchange accounts in the Bank of China.[33]

Mixed results. These readjustments in policy have led to certain positive results. China's foreign trade continues to increase, and its 1985 total trade turnover of US$69.6 billion is expected to expand by some 8 percent in 1986.[34] Moreover, the structure of China's trade has changed. While the proportion of oil in total exports has declined, the proportion of exports of manufactured goods and agricultural products has increased. Although the export of Chinese goods and materials to Hong Kong fell in 1985, the pace of this decline slowed in the first half of this year then leveled off. China's trade deficit during the first four months of 1986 was US$939 million, far less than in the first four months of 1985,[35] and the latest official figures place the trade deficit at US$1.24 billion for the first half of 1986.[36] China's major trade partners remain Hong Kong, Japan, the United States, and Western Europe, although its trade ties with the Soviet bloc have expanded steadily.[37]

Nevertheless, a few problems remain. First, only the decision-making process governing exports has been decentralized; indeed, lines of authority and control regulating imports, foreign investment, and the expenditure of foreign exchange, as noted above, have been recentralized. This has been due largely to the government's efforts to reduce its foreign trade deficit, balance its international payments, minimize competition among Chinese entrepreneurs in the international market place, and eliminate the increase in "economic crimes." The central authorities—especially the Ministry of Foreign Economic Relations and Trade, the Bank of China, the People's Bank of China (the central bank charged with formulating and carrying out monetary policy),[38] the General Administration of Taxation, and the General Administration of Exchange Control —have strengthened their power vis-à-vis local authorities and enterprises.

Many complicated procedures and regulations have been reintroduced to supervise, control, and, if need be, intervene in the relations between local businesses and foreign corporations. As a result of the government's new policy stressing the balancing of foreign exchange,[39] all agreements signed between Chinese and foreign corporations now have to be approved by these central governmental agencies. This obviously makes negotiations between foreign corporations and their Chinese counterparts regarding imports to China more difficult than before.

This new emphasis has also led many Chinese entrepreneurs to propose additional trade projects to their foreign counterparts, regardless of whether the latter have the capacity to undertake them. This has dampened foreign corporations' enthusiasm for new projects, which, in turn, has curtailed the initiatives of their Chinese counterparts. The resulting damage has been particularly harmful to the government's new desire to increase the proportion of manufactured goods in China's total exports, as this goal requires an institutional mechanism for quick response to the dynamics of the international market. To be effective, such a mechanism must be responsive to the specific needs of enterprises and individuals and allow for decisive initiative and autonomous decision-making.

In the second place, the over-valued exchange rate of the RMB and the existing price gap between the Chinese domestic market and the international market have, increasingly, become key factors inhibiting the expansion of both Chinese exports and foreign investment in China. The current exchange rate between the RMB and US dollar is approximately 3.7 to 1. According to a survey conducted by a group of outstanding economists at the China National Institute of Economic System Reform of the State Council, the shadow exchange rate is about 6 to 1.[40] Unless the government is prepared to depreciate the RMB further, many Chinese enterprises will not have much incentive to increase their exports.

In general, prices for commodities in the Chinese domestic market are much lower than they are in the international market, especially for energy and raw materials. For example, despite the recent decline in oil prices in the international market, the price of oil in the Chinese domestic market is still only about one-third of international market cost.[41] More important, due to the sudden and dramatic rise in the inflation rate that accompanied the price reform in the last quarter of 1984 and the first quarter of 1985, the central govern-

[33]Research Team of Foreign Exchange and Foreign Trade, loc. cit., p. 13, and *Fujian Luntan*, No. 10, 1985, pp. 29–30.

[34]*Liaowang*, Apr. 21, 1986, p. 1.

[35]*Renmin Ribao*, Mar. 2, 1986, p. 3, and *Liaowang*, May 21, 1986, p. 6.

[36]*Liaowang*, Aug. 11, 1986, pp. 12–13.

[37]Sino-Soviet trade, for example, reached US$1.6 billion in 1985. It is expected to increase to US$1.9 billion in 1986. See *Beijing Review*, Apr. 22, 1985, p. 6, and June 10, 1985, p. 7; and *Shijie Jingji Daobao*, Aug. 18, 1986, p. 2, and Aug. 25, 1986, pp. 1–3.

[38]For a discussion of recent developments in Chinese fiscal and monetary policy, see Dean Carver, "China's Experiment with Fiscal and Monetary Policy," in US Congress Joint Economic Committee, *China's Economy Looks Toward the Year 2000, Vol. 1: The Four Modernizations*, Washington, DC, US Government Printing Office, 1986, pp. 354–75.

[39]Lin No, "To Strengthen and Promote Openness," *Nanfang Ribao* (Guangzhou), June 9, 1985, p. 1; and *Shijie Jingji Daobao*, Mar. 24, 1986, p. 3.

[40]Research Team of Foreign Exchange and Foreign Trade, loc. cit., p. 13.

[41]*Liaowang*, May 21, 1986, p. 1.

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ment has reintroduced administrative measures to control price movement. Consequently, the price structure in China has been unable to respond effectively either to the dynamics of market supply and demand or to the productivity of individual enterprises; nor has it been linked closely to the price structure in the international market.

Third, the government's foreign trade strategy faces a number of difficulties. Its policy of allowing local authorities and enterprises to retain a part of earned foreign exchange has weakened the government's control over the outflow and expenditure of foreign exchange—a large amount of which has been thus either spent on importing consumer goods or simply traded illicitly on the black market. This also occurs because the demand for imported goods has been great, the RMB has been over-valued, and the price gap between the Chinese domestic market and the international market remains wide.

The plan to upgrade China's export structure by changing the emphasis from primary goods (for example, raw materials, oil) to manufactured goods has not yet made much headway. This is because the government has not adopted proper financial and fiscal policies in support of this program, nor has it made effective institutional changes in order to provide enterprises with sufficient incentive to increase their exports of manufactured products. Lack of knowledge of the international market, especially as concerns changing trends in fashion and minimal standards of quality, remains a basic reason why China has been unable to increase significantly its exports of manufactured goods.[42]

The government has failed to devise an effective mechanism capable of balancing the need to intervene in foreign trade (especially imports) with the need to decentralize decision-making power. In particular, there is no legal institution to monitor government intervention and defend enterprises against inappropriate or arbitrary instances of it. Add to this list of shortcomings the lack of a realistic long-term foreign trade strategy, and the result is a substantially weakened capacity to perform in the international market.

Foreign Investment in China

Since the appearance of the first signs of trouble in the "open door" policy in late 1984, the Chinese government has continued its efforts to attract direct foreign investment. Amplifying its April 1984 policy of "opening" 14 coastal cities to foreign investment (see map on p. 62), the government has further announced the opening of three deltas: the Zhujiang (Pearl River) Delta, the Changjiang (Yangtze River) Delta, and the Minnan Delta in Southern Fujian Province.[43]

Unlike the SEZ's and Hainan District, these three deltas enjoy a comprehensive industrial system with a well-developed infrastructure, a highly qualified and skilled labor force, a long tradition of entrepreneurial spirit, a great market potential, and a prosperous rural economy. They thus can provide a better investment environment for foreign investors than the SEZ's can. More important, these regions have traditional ties with the international market and are better able to expand exports than the SEZ's are. There are, as well, strong ties between these deltas and overseas Chinese, many of whom are successful businessmen who have been encouraged by Chinese leaders to contribute and participate in the development of their hometowns. Mr. Yue-kong Pao (Sir Y.K. Pao), the chairman of the board of Hong Kong Worldwide Shipping Group, for instance, was named senior adviser to the Leadership Team for Development of Ningbo City. Mr. Pao and other overseas businessmen have contributed millions of dollars to the development of China's economy and education.[44]

Moreover, in these deltas and other open coastal cities, the government has established "Economic and Technological Exploitation Zones," whose development priorities are to obtain more "advanced" technology through foreign investment and to expand exports. To help attract overseas investment, the central government approved a plan in May 1984 granting foreign investors special tax rates and tax holidays similar to those adopted in SEZ's, as well as duty-free imports of production goods.[45] The zones are also intended to stimulate local participation, and local authorities have invested considerable sums in them.

This is not to say, however, that the government has abandoned the further development of the SEZ's and Hainan District. Deng Xiaoping has indicated that the SEZ's should continue to serve as "open doors" for the introduction of modern technology, knowledge of contemporary management, foreign investment, and civilization.[46] And Premier Zhao has said that the SEZ's

[42]Ibid., pp. 14–15.

[43]*Jingji Ribao* (Beijing), Feb. 1, 1986, p. 1; He Chunlin, "China Is Facing a More Open Situation," *Liaowang*, Jan. 6, 1986, pp. 12–13; and *Liaowang*, Apr. 21, 1986, pp. 12–13.

[44]Yu Youhai, "An Important Decision To Accelerate Ningbo's Economic Development," *Liaowang*, June 6, 1986, pp. 7–8; and "Interview with Yue-kong Pao," ibid., May 5, 1986, pp. 12–13.

[45]See document issued jointly by the CCP Central Committee and the State Council, "Notification of Approval of the 'Summary of the Conference of Some Coastal Cities,'" Beijing, May 4, 1984.

[46]He Yunghua, "Report of the National Working Conference on the Special Economic Zones," *Liaowang*, Feb. 10, 1986, pp. 3–4.

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Production line of the Yantai Silk Printing and Dying Mill, a joint Chinese-Italian venture in the open city of Yantai in the Pearl River Delta.

—Gamma-Liaison.

should treat the earning of foreign exchange as the priority in their development strategy.[47]

But the debate about which model the SEZ's should follow continues. Should their orientation be to attract advanced technology, or should the SEZ's lean toward labor-intensive and export-oriented economies?[48] The government has recently appeared to encourage all the SEZ's to follow the direction of Shekou Industrial Zone and Shantou Special Economic Zone. Their model involves the development of a labor-intensive, low-technology economy with less investment and with an orientation toward exports as the basic development priority. This approach does not require huge capital investment on the part of China, and it can be effective within a relatively short period of time. More important, it will enable the SEZ's to earn foreign exchange.[49]

But past experience has taught the government the need for strict supervision of the SEZ's and Hainan District. Thus, besides reducing the amount of foreign exchange at the official exchange rate made available to the SEZ's and Hainan District, the central government has adopted more restrictive policies in order to control their imports and their expenditure of foreign exchange. With a few exceptions, notably those corporations that bring "advanced" technology to the SEZ's and Hainan District, all enterprises involved with foreign investors have been instructed to balance their foreign exchange; that is, foreign investment return and profits must derive solely from these enterprises' exports.

In addition, a number of central government agencies, such as the Bank of China, the People's Bank of China, the General Administration of Taxation, and the Ministry of Foreign Economic Relations and Trade, have strengthened their capacity to supervise and intervene, if necessary, in the activities of the SEZ's and Hainan District. In order to undertake new projects involving foreign companies, enterprises within the SEZ's and Hainan District must now first obtain ap-

[47] *Shijie Jingji Daobao*, May 5, 1986, p. 14.

[48] *Yinjing* (Guangzhou), No. 3, 1985, pp. 6–7; *Guangzhou Yanjiu*, No. 5, 1985, pp. 20–21; and *Shenzhen Tequbao*, Nov. 11, 1985, p. 4.

[49] Weng Chengji, "The New Economic Situation of Shantou Special Economic Zone's Importation," *Zhongguo Duiwai Maoyi* (Beijing), No. 7, 1985, pp. 22–23; Huang Jingbo, "The Special Economic Zones' External and Internal Orientation," *Gangao Jingji* (Guangzhou), No. 5, 1985, pp. 27–28; and *Shijie Jingji Daobao*, May 5, 1986, p. 14, and May 15, 1986, pp. 14–15.

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proval from each of these agencies. Moreover, enterprises in the SEZ's can neither lend nor borrow foreign exchange to or from each another without approval from the Bank of China and the General Administration of Exchange Control.[50] The central government has also encouraged various ministries and provincial governments to cooperate with one another in bringing investment, technology, and skilled labor into these zones, thereby strengthening the zones' capacity to expand their exports.[51]

In order to improve the investment environment and to increase long-term confidence on the part of foreign investors in the Chinese market, Chinese leaders have repeatedly announced that they will never alter the "open door" policy, although they do acknowledge that it may be necessary to make certain policy readjustments in response to the changing economic reality.[52] Thus, Chinese leaders, either when visiting industrialized countries or when conversing with foreign guests at home, have consistently tried to convince those from the foreign business community to invest in China. In addition, the government has sped up the process of narrowing the legal gap that remains between China and countries with market economies by passing new laws and regulations. Correspondingly, the government has signed relevant agreements and treaties with foreign governments concerning the protection of foreign investment in China and transfer of technology to China.

Recently, the government decided to open Chinese capital and labor markets. In April 1986, the government passed the "Law of the People's Republic of China on Enterprises Operated Exclusively with Foreign Capital."[53] Although the law is vague on several important issues—most notably as concerns the circumstances under which foreign-owned enterprises can be expropriated—it does represent a significant step toward securing the legal rights of foreign investors in China. Among other things, for example, in those enterprises that are 100-percent foreign-owned, foreign investors are to enjoy total control of management, the right to hire and fire employees, and the right to protect their technology.

As a result, the investment environment in China appears to have improved considerably. During the past two years, according to Chinese sources, the number of foreign-involved enterprises has increased from 4,500 to over 7,300.[54] More investment has come from the United States, Japan, and Western Europe, and the proportion of industrial projects has increased significantly. Moreover, the proportion of Hong Kong capital has declined to 63 percent of total investment. While the SEZ's and Hainan District have steadily recovered from their crisis of a year and a half ago, more foreign investment has been placed in the three deltas and in other open coastal cities. More foreign banks and corporations have opened offices in China, and by April 1986, over US$17 billion in foreign investment had already been invested. According to the most recent government data publicly available, there are over 2,300 joint ventures, 3,700 joint management companies, and 120 one-hundred-percent foreign-owned enterprises in China.[55] The SEZ's, notably Shenzhen and Shantou, have increased the percentage of industrial output in total GNP, and the percentage of exports in total industrial products.[56]

Addressing foreign investors' concerns. From the perspective of foreign investors, five basic issues are critical: the possibility of sharing the Chinese domestic market, the availability of low tax rates, the prospect of low production costs, the capacity to convert profits into hard currencies, and, finally, the presence of guarantees that their investment will have secure legal protection from possible future policy shifts by the Chinese government.

To help balance its international payments, the Chinese government requires foreign investors to sell abroad those products that their enterprises produce in China. Nevertheless, many foreign-involved enterprises in China are not competitive in the international market and thus must depend heavily on China's domestic market. There are two basic categories of foreign investors who are interested in the Chinese market. The first is composed of those who believe that their production costs will be lower in China than elsewhere because of the comparatively lower cost of labor, raw materials, rents, and tax rates there. The lines of production of this group's enterprises are likely to be labor-intensive. More important, these investors usually share or control a portion of the international market and thus do not depend on the Chinese do-

[50]*Shenzhen Tequbao*, Nov. 4, 1986, p. 2; *Shijie Jingji Daobao*, Mar. 24, 1986; and *Renmin Ribao*, Feb. 1, 1986.

[51]*Renmin Ribao*, Oct. 7, 1985, p. 5.

[52]E.g., see ibid., Apr. 10, 1986, p. 1; and June 12, 1986, p. 1.

[53]Ibid., Apr. 21, 1986, p. 1; and *Liaowang*, Sept. 1, 1986, p. 5. See the column by Xu Yuanchao in *China Daily* (Beijing), Apr. 23, 1986, in which some questions concerning the new law are answered (p. 2).

[54]*Renmin Ribao*, Dec. 16, 1986, p. 1; and *Liaowang*, Apr. 21, 1986, p. 1.

[55]*Beijing Review*, May 5, 1986, pp. 16–17.

[56]Liang Wensen, "Shenzhen Special Economic Zone's Economic Development and its Future," *Gangao Jingji*, No. 9, 1985, pp. 23–28; *Liaowang*, June 2, 1986, pp. 12–13; and *Shijie Jingji Daobao*, Mar. 17, 1986, pp. 1–2.

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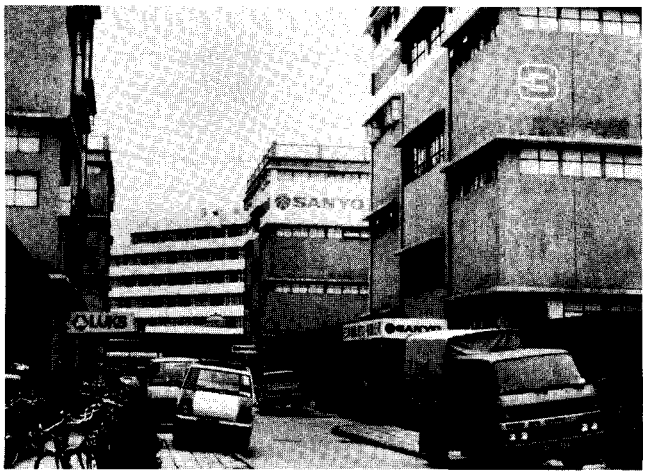

The Sanyo complex in the Shekou Industrial Zone of Shenzen Special Economic Zone.

—Photoreporters.

mestic market. They are able to export a high percentage of their products from China.

The second category consists primarily of those who either have high expectations of the Chinese domestic market or whose own position in the international market is not very strong. The Chinese government's new policy of controlling the domestic market has therefore discouraged the second group of foreign investors from investing in China.

During the past 18 months or so, it has been particularly difficult for foreign investors, working through the Bank of China, to convert profits made in China into hard currencies, although the agreements they had signed with their Chinese counterparts promised to allow them to do so. Instead, they have been encouraged by the Chinese to re-invest their profits and expand their production in China. Such suggestions, of course, only make the situation worse, as foreign investors feel forced to keep their investment in China although the potential for gain and profits remains uncertain.

The current exchange rate of the RMB has also reduced the actual value of capital investment that foreign investors bring to China. Moreover, largely because of the lack of a well-developed market structure, the government, especially at the local level, has readily (and at times arbitrarily) raised rents and wage levels. The increased inflation rate, together with the general shortage of supply, has led to a price increase on many producer goods and energy.[57] As a result, foreign investors complain often about the high cost of maintaining branch offices in China and about high production costs in general.

Similarly, the government has become less generous than before in offering low tax rates and long taxholidays to foreign-involved enterprises, especially those outside the SEZ's and Hainan District. Neither the "Law of the People's Republic of China Concerning Joint Ventures Using Chinese and Foreign Capital" nor the "Law of the People's Republic of China on Enterprises Operated Exclusively with Foreign Capital" is sufficiently specific on this issue. Some local authorities have taken advantage of this lack of specificity and have on their own raised taxes on foreign-involved enterprises. This has led some foreign investors to complain that Chinese laws are, among other things, "too general" and "too vague."[58]

Such complaints, in general, do not seem unfounded. There does appear to be an absence of institutional guarantees and of consistency in policy. This is largely due to the lack of an effective mechanism to coordinate existing law and legal institutions with governmental policies, policies that are frequently modified in response to changing domestic and international developments. Present Chinese legal institutions provide neither Chinese nor foreign enterprises the guarantees and rights that accompany a comprehensive or complete legal process. Nor are Chinese laws detailed enough to cover all issues and contingencies encountered in doing business. The absence of proper courts and of predictable and guaranteed judicial procedures, as well as of qualified lawyers, has enlarged the gap in legal conception between Chinese and foreign investors. As a result, each side often interprets legal agreements in quite different ways.

Technology Transfer to China

The Chinese government continues to urge industrialized countries, especially the United States and Japan, to reduce barriers against transfer of advanced technology to China, particularly computers, telecommunications equipment, and other dual-use technology. Many Chinese ministries, including the Ministry of Defense and the Office of Defense Industry, now station representatives overseas to collect information about the most recent developments in high technology and the possibility of purchasing such technology for China. And more and more foreign corporations have been invited to open exhibitions in China to introduce their new products.

[57]Yang Zhihe, "A Discussion of the Structure of Industries in the Special Economic Zones," *Nanfang Jingji*, No. 5, 1985, pp. 14–15.

[58]*The Asian Wall Street Journal* (Hong Kong), Mar. 17, 1986, p. 4, and *Shijie Jingji Daobao*, Apr. 21, 1986, p. 10.

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By gradually shifting its priority in importing technology from the purchasing of production lines to the granting of licenses for manufacture in China, the Chinese government has exploited various new forms of technology transfer.[59] In addition to offering lower tax rates and longer tax holidays on a selective basis to Chinese-foreign joint-venture and joint-operation enterprises, the government has formulated a strategy of "technology-market trade-off." This strategy is designed to open China's domestic market to those foreign corporations that can introduce "advanced" technology to China, that is, technology that China is unable to produce on its own.[60] In order to enhance its knowledge of the international technology market, the Chinese government has begun to hire foreign consulting companies. It has also formed a number of domestic corporations that specialize in such tasks as supplying parts for the repair of imported equipment, importing second-hand machinery, and leasing equipment from abroad.[61]

The central government has paid greater attention to coordinating imports of technology undertaken by different ministries and local governments. Several central government agencies, such as the General Administration of Exchange Control, the Bank of China, the State Commission of Basic Construction, the State Commission of Science and Technology, and the China Technology Import and Export Corporation, have appeared to play an increasingly significant role in planning, controlling, coordinating, and undertaking projects in this field.

Since 1984, the China National Technical Import Corporation, which has primary responsibility for importing technology and industrial equipment for the central government, has set up 12 local branches in major Chinese coastal cities and a number of representative offices abroad. It has been particularly active, and apparently quite successful, in providing information about the international technology market to local governments and business institutions and in helping them choose and purchase appropriate technology and equipment. During the past two years, the Corporation's local branches have undertaken about 1,800 projects, valued at over US$1 billion.[62]

Overall, the government's reform program has provided local authorities and enterprises with greater flexibility and decision-making power in dealing directly with foreign corporations. As a result, by deploying various forms of Chinese-foreign joint operations, such as joint ventures, product processing,[63] and joint management arrangements, local authorities and enterprises have been more active than before in developing their own capacity to import technology. But such ventures can be successful only if local authorities and enterprises are kept abreast of the latest developments in science, technology, and management. Accordingly, China is developing a nationwide network for translating and circulating the most current foreign publications on these subjects.[64] The government also sponsors lectures by foreign scholars and experts in China, and encourages their Chinese counterparts to participate in international exchange programs.[65]

China thus continues to import a great amount of technology from industrial market economies. This has been facilitated in recent years by the removal of certain barriers against transfer of technology to China. Both the Consultative Group–Coordinating Committee (CoCom) and the United States have continued to expand the number of items of technology that can be transferred to China, notably in computers and telecommunications, as well as other dual-use technology. Moreover, early this year, the United States government reduced from 90 days to 30 days the time needed for American corporations to apply for permission to sell technology to China. Chinese authorities, for their part, seem better prepared to receive such technology. Indeed, the importation of technology to China now appears better planned and coordinated; and efficiency in using imported technology has improved. More important, China has been placed in a better position to deal with foreign corporations in the international technology market, as it can import technology from a number of international suppliers.

Foreign and domestic obstacles. Yet, serious problems remain in acquiring and assimilating foreign technology. At CoCom, for example, China's status has been clouded by debates over whether, as some West European countries advocate, China's special status should be extended to the Soviet Union and East European countries. Others, notably the United States,

[59]Li Shiyi, "To Accelerate Technology Reform Is the New Tendency of China's Economic Development," *Liaowang*, Mar. 17, 1986, pp. 5–6.

[60]*Zhongguo Jingji Wenti* (Xiamen), No. 3, 1985, p. 17.

[61]Tom Engle, "CITIC: Pacesetting Corporation," *China Business Review*, July-August 1985, pp. 6–7; and *Liaowang*, Jan. 20, 1986, p. 16.

[62]Cao Jiarui, "The Present Situation and Problems of China's Importation of Technology (III)" *Liaowang*, May 19, 1986, pp. 8–9; and Song Jian, "The Strategy of China's Technological Development," ibid., Apr. 21, 1986, pp. 6–7.

[63]Under this arrangement, foreign corporations supply raw materials, parts, and at times equipment and contract with Chinese enterprises to process these materials into finished products. The Chinese side is paid a fee for processing; the foreign corporation takes the finished product.

[64]Zhuang Kaixiong, "China Will Import More Advanced Technology," *Liaowang*, Mar. 17, 1986, pp. 14–15; and *Beijing Review*, May 12, 1986, p. 31.

[65]*Renmin Ribao*, June 3, 1986, p. 4, and *Beijing Review*, June 16, 1986, pp. 21–27.

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have strongly opposed this. Moreover, there has been some resistance in the United States, particularly among certain interest groups with considerable political influence both in the administration and on Capitol Hill which have continued their efforts to block the transfer of high technology to China.

Many foreign corporations, too, hesitate to sell their most recent technology to developing countries, including China, for fear of enhancing the competitiveness of potential rivals who enjoy the advantages of government subsidies and cheaper labor costs. This is particularly true of Japanese corporations. Chinese officials have often complained of the difficulty in obtaining technology from the Japanese and have become more interested in dealing with Europeans, notably German and French corporations, who are viewed as more reliable and more willing to transfer technology to China. In the United States, many small and medium-size companies see no advantage in transferring technology to China, as it may be a very costly, complicated, and time-consuming process.[66] Meanwhile, the relevant US government agencies, such as the Department of Commerce, the Agency for International Development, and the Department of State, continue to treat requests for technology transfer to China as routine business.

For China's part, the absence of cooperation between Chinese and American corporations has been another reason why it has been unable to exploit fully the available technology currently allowed to be transferred to China. Moreover, the Chinese government has not learned how to lobby effectively on Capitol Hill or with the administration, nor has it provided American corporations with sufficient incentives to lobby on China's behalf.

In addition, as a Chinese economist observes, many projects involving the import of technology are undertaken without the requisite infrastructure or qualified technical personnel and without careful analysis of costs and benefits for each project.[67] As a result, many imported production lines have had to depend on the external supply of components, parts, and even of administrators and technicians. Production costs have thus risen, and the Chinese have found it difficult to realize technological independence and to balance their international payments. Also, in its stress on importing "hard" technology, the government has paid insufficient attention to the importance of gaining essential "soft" technology.

Moreover, even if Chinese enterprises buy the latest technology and use it effectively, they must still face two difficult obstacles. They cannot sell their products easily in the international market as they do not know the market sufficiently; and in the domestic market, the demand for this latest technology is not on a scale necessary for its efficient use and operation.

Educational and Cultural Exchange

During the past two years, the Chinese government has continued to expand its cultural and educational exchange programs with other countries, especially those in the West, as well as Japan. Its policy of sending students abroad, however, has undergone important changes. Not only has the number of students studying overseas increased, but more important, the proportion of visiting scholars spending shorter periods of time doing independent research (rather than entering regular academic programs) in foreign countries has risen as well. Moreover, increasing numbers of younger students, many of whom are now majoring in the humanities, management, and other social science subjects, have been encouraged to work for their doctoral degrees. Their proportion of the total number of Chinese students studying abroad has reached 17 percent.[68]

The Chinese government is taking greater care than before to maintain close contact with Chinese students studying overseas. In order to prevent the possibility of a "brain drain," the government recently passed a regulation requiring college graduates to work in China for five years before being allowed to go abroad for their postgraduate education. In addition, those who complete their doctoral programs are being discouraged from undertaking postdoctoral programs abroad. Meanwhile, the Chinese press frequently carries stories about returned Chinese students who have been treated well and have been promoted to key positions in China. Chinese diplomats abroad, for their part, maintain regular contact with Chinese students at various campuses, and Chinese students associations overseas are becoming more active than before. In China, the ongoing reform process is seen as creating a better working environment and more opportunities for those who return. The Chinese government also actively seeks reassurances from foreign governments and some nongovernment sponsors that they will encourage Chinese students to return to China upon the completion of their studies.

[66]Many American businessmen whom I interviewed said that it was still quite complicated and time-consuming to deal with China despite the US government's recent attempts to speed up the process.

[67]Cao, "The Current Situation and Problems of China's Importation of Technology (I)," loc. cit.

[68]*Liaowang*, June 23, 1986, p. 5.

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Technicians of the Japanese Mitsubishi Nuclear Energy Industry Company explain a model nuclear power station to Chinese spectators at a Beijing exposition in December 1985.

—Eastfoto.

Another important component of the government's policy is to try to create a stimulating intellectual and cultural environment at home. More and more foreign scholars are being invited to give lectures and seminars on various subjects in China, and a great deal of literature, both academic and nonacademic, is being translated into Chinese and published in China. More and more Chinese cultural delegations are visiting abroad, and China's intellectual elite, as well as Chinese youth, are enjoying greater exposure to Western music, movies, and arts.

As a result of these policies, the number of Chinese students studying abroad continues to increase, but so does the number who return. According to official Chinese sources, approximately 16,500 Chinese students, mainly those sponsored by the Chinese government, have already returned to China and have begun to play a critical role in various government and nongovernment (academic and business) institutions.[69] The cultural exchange programs between China and other parts of the world have expanded rapidly, and Western culture, values, and scholarship, while the source of considerable debate among Chinese leaders, have come to increasingly influence Chinese youth, intellectuals, and society as a whole.

There have been other positive results as well. A new generation of Chinese policymakers and scholars who are open-minded and who have a broad international perspective is maturing. Chinese leaders travel frequently, especially to industrialized countries, consult with foreign experts, and read broadly. More and more high- and middle-level cadres are being sent to industrialized countries for training and study, and foreign scholars' comments and literature on China's domestic development and foreign policies are being widely disseminated throughout the Chinese bureaucratic establishment. As a result, Chinese leaders not only are more confident and better informed about various domestic and international issues, they also have considerably more opportunity to hear opinions and perspectives other than their own. In comparison with the earlier periods, they are thus seen as being more liberal, open-minded, and better integrated into the international community.

[69] *Renmin Ribao*, May 14, 1986, p. 1, June 6, 1986, p. 4, and June 19, 1986, p. 1.

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Nevertheless, the Chinese government's policy of cultural and educational exchange has not been fully consistent. The government has discouraged students who are not in official exchange programs from going abroad to study, and beginning this year, it has been pressuring all students, regardless of status, not to take their families overseas with them. It has also made it more difficult for those who have completed their planned academic program to transfer to another program in order to extend their studying and research abroad,[70] and it has announced that Chinese students must study for their Master's degree at home rather than abroad.

These restrictive measures have affected mainly those who are sponsored by the Chinese government and those who are still in China and trying to leave. They have not been as effective with those who are already abroad or who do not belong to the official exchange program. Not surprisingly, these restrictions have alienated many Chinese students and discouraged them from returning to China, arousing more suspicion and apprehension about further possible policy shifts by the government.[71]

In general, the government's cultural policy has been quite liberal. It has not been able, however, to maintain a stable and consistent cultural policy at home. Party conservatives have launched attacks on almost every new development in literature, the arts, the humanities, and the social sciences.[72] This has seriously alarmed those studying abroad, who worry about the potential conflict between official ideology and their academic disciplines and performance, again increasing their anxiety about returning to China.

There has been a lack of balance between Chinese leaders' use of foreign experts on the one hand and their use of China's own experts on the other. To be sure, the consultations and discussions that Chinese policymakers have had with foreign experts have expanded these officials' knowledge and perspective on various international and domestic issues. Nevertheless, many of the foreign experts to whom they have given a hearing know little about China and its problems of development, even though they may be distinguished in their own fields. Their comments on China's development are thus often very general and not necessarily relevant to Chinese reality. Moreover, the avenues wherein Chinese scholars may present their opinions and offer policy recommendations are random and have not been institutionalized.

Political Risks

The political risks of the "open door" remain. The degree of risk is largely influenced by five interrelated factors. The first derives from China's institutional shortcomings and weaknesses. The way to eliminate or alleviate these problems is to make further institutional economic reform, thereby narrowing the existing institutional gap between the Chinese economy and market economies.

The second factor concerns the dynamics of China's domestic political and economic development. Internal politics within the party and government have frequently affected the "open door" policy, partly due to the disparity between reform practice and rigid official ideology. In addition, different interest groups have benefited in varying ways by the "open door" policy. They have, accordingly, taken conflicting attitudes toward China's "opening to the outside world." The most effective way to reduce (it seems impossible to eliminate) the damage caused by these problems and eliminate the negative effects of ongoing political infighting over the "open door" policy, of course, would be to reform China's political system as well as its ideology. But this would be a monumental and difficult undertaking, and one fraught with uncertainty. So far, the Chinese government has been very cautious about China's planned political reform.

The third category is rather functional. The Chinese do not really know how to "open the door" and to perform effectively in the international market. This is particularly true of the Chinese government's policies regarding the SEZ's and the areas of foreign trade, foreign exchange, and foreign investment. The problem of coping with shifts in domestic economic policies has increasingly challenged the government, although during the past few years the government has made remarkable progress in enhancing its knowledge and improving its practice. These areas can be further aided by the normal learning process. The key issue here is to open more channels of policy consultation both within and outside the government and to raise a new generation of policymakers who have expertise in international business and finance. To be effective, however, such policymakers must be provided strong inducements, allowed initiative, and given the freedom to perform.

The fourth category concerns the dynamics of the

[70]Interviews with Chinese students who came from China recently.

[71]One Chinese scholar estimated that about one-fifth of the Chinese students studying abroad are from Shanghai. About one-third of them, he said, are not sponsored by the Chinese government. Of that one-third, only very few intend to go back to China upon the completion of their studies overseas. See *Shijie Jingji Daobao*, Apr. 7, 1986, p. 8.

[72]Ibid., Apr. 21, 1986, pp. 1, 2, and 13; and May 12, 1986, p. 6.

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A Singapore-registered ship at the fifth loading-unloading zone, one of the foreign trade docks of Shanghai Harbor.

—Eastfoto.

international environment in which China conducts business, especially in the Asia-Pacific region, where China conducts roughly 75 percent of its total foreign trade. Due to increased Chinese participation in international business transactions, the degree of interdependence between the Chinese and the world economy as a whole has increased. Certainly, many issues, such as the movement of oil prices, the process of worldwide recessions, and the increase in trade protectionism, are largely outside China's control. The establishment of mechanisms capable of accommodating policy adjustments, however, can reduce external damage to the Chinese economy. Moreover, intragovernmental consultation and cooperation and increased participation in international organizations can also help cope with these difficulties.

Finally, certain problems are inevitable. These are basic costs that every country must pay in the process of transforming itself from a relatively closed society to an open one—politically, economically, and culturally. Nevertheless, together with other economic and political difficulties, these problems can undermine the legitimacy of the "open door" policy, intensify conflicts within the party, generate social tensions, and damage the business community's confidence in the Chinese market. To a large extent, these problems will continue to exist and even intensify. The key issue for the Chinese government here is how to reduce their negative effect on the "open door" policy.

Although the post-Mao economic reform has restructured China's agricultural system, created a private sector, and partially changed the urban industrial system, the national economy is still largely based upon a central planning system. There are no well-developed markets of capital, labor, land, and producer goods in China. The central authority continues to play a key role in allocating financial, natural, and human resources. The price structure, especially in

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the urban industrial sector, is largely controlled by the government, although the recent price reform has introduced the market mechanism into the economy. These institutional shortcomings have made it difficult for foreign investors to achieve their long-term planning, manage their operations in China, and integrate the Chinese and international markets.

The high exchange rate of the RMB and the price gap between the international market and China's domestic market provide the institutional bases for the development of black-market activity, smuggling, and other "economic crimes." The current legal institutions in China do not define clearly the legal rights of enterprises and individuals engaged in the business activities, nor do they offer full legal protection to those developing the private sector in China.

During the past several years, China's domestic development has been generally stable and positive. After a brief interval during the first half of 1985,[73] the reform group has been able once again to pursue its program on both political and economic fronts. It has made strong efforts to facilitate the departure from the scene of the old generation of cadres and functionaries and has replaced them systematically with large numbers of younger, better educated, and more open-minded people—many of whom have had experience traveling or studying in the West.[74] These personnel changes have been carried out effectively at the ministerial and provincial levels.

In the course of carrying out these difficult transitions, the reform group has recovered the confidence to deepen its reforms in the realm of ideological affairs. It has emphasized the importance of creating a favorable atmosphere for academic and policy debates, and it has encouraged further introduction of Western economics into China.[75] These developments indicate that the reform group of the leadership has gained the upper hand over its conservative opponents in the debate over the role of ideology in China's Four Modernizations.

In the economic field, the reform group has extended price reform and development of the SEZ's, and begun to build up Chinese labor and capital markets. In addition, it has continued the development of the private sector and of "horizontal" joint ventures, joint operations, and technology transfer between enterprises in different industries and regions.[76] These efforts have buttressed the "open door" policy, improving the domestic climate for its implementation.

Nonetheless, the "open door" policy faces a number of serious domestic challenges. In the first place, the reform group has not fully subdued the opposition in the debate over party ideology, nor has it been able to create a new ideology sufficient to justify and legitimize its reform program and the "open door" policy. Individual political leaders, notably Deng Xiaoping, who is 82, have played key roles in the balance of power within the top leadership establishment as well as in the policymaking process. But, as recent debates on the development of the SEZ's have indicated, the conservatives have been able to challenge the reforms and the "open door" policy from both theoretical and technical perspectives. They have argued that the "opening to the outside world" has led China down the "capitalist road" and sold out China's sovereignty. Such attacks have shaken the confidence of foreign investors, who worry that shifts in policy may take place after Deng's departure. As a result, they are somewhat hesitant to make long-term commitments to the Chinese market.

Second, the systematic replacement of personnel has not been carried out successfully at low and middle levels. This is due partly to the fact that most mid- and low-level bureaucrats are relatively young, but also because the government has not accomplished proper institutional reforms needed to support and stabilize such changes in personnel. As a result, with the exception of foreign-involved enterprises in the SEZ's, party organizations still play the central role in determining decision-making in enterprises. This development has restricted these enterprises' capacity to deal effectively with foreign corporations, as most party political cadres know little about technology and business. It has also made it difficult to promote those who have studied abroad to key positions in various government and nongovernment institutions.

Third, during the last few years, the process of China's economic development has at times appeared to be unstable.[77] This has been largely due to the government's weakened capacity to manage the national economy and its consequent frequent policy changes. This instability in economic development has created additional serious difficulties for the secure

[73]As a result of the economic crises that occurred in the last quarter of 1984 and the first quarter of 1985, the reformers found themselves in a difficult position within the government. They had to parry the conservatives' strong criticisms of China's economic policies in general and the price reform and "open door" policy in particular.

[74]*Renmin Ribao*, June 29, 1986, p. 1.

[75]"Academic Youth Discussing the Political Reform," *Shijie Jingji Daobao*, May 26, 1986, pp. 1–2, and June 9, 1986, p. 2; and *Renmin Ribao*, May 18, 1986, p. 1, and June 6, 1986, p. 2.

[76]*Liaowang*, Apr. 14, 1986, pp. 22–23; *Renmin Ribao*, Feb. 5, 1986, p. 3; and *Shijie Jingji Daobao*, Mar. 24, 1986, p. 1.

[77]*Shijie Jingji Daobao*, June 6, 1986, p. 2, and *Liaowang*, Apr. 21, 1986, pp. 4–5.

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adoption of the "open door" policy. The central government's policy shifts between high and low speed in pursuit of national economic growth have damaged China's credibility in the international market and deepened the hesitation of foreign corporations to build long-term ties with China.

Moreover, apart from policy itself, the unstable process of economic development has weakened the position of Chinese enterprises in the international market and their capacity to deal with foreign corporations. This is because at each peak point of the development cycle, the central government has implemented, usually without warning, restrictive financial, monetary, fiscal, and foreign exchange policies. As a result, Chinese enterprises have had difficulty fulfilling commitments made previously to their foreign counterparts. Such vacillation has certainly made it difficult for foreign corporations to meet their production and marketing schedules. They have also had difficulty in purchasing essential production goods in the Chinese domestic market, as Chinese government policy changes have had a significant effect on supply, demand, and prices in general.

The task of managing the "open door" policy has increasingly presented a serious challenge to the Chinese government. In particular, both China's domestic development and the international environment have undergone significant changes in the past few years. These changes require the Chinese government to adjust its policies if it is to cope adequately with a dynamic and ever-changing reality. But the government lacks a clear-sighted policymaking body imbued with unimpeded authority and the proven capacity to manage China's "opening to the outside world." In the absence of this, its policymaking procedure has been inefficient. Many policies do not last very long; and there has been no effective institutional mechanism to coordinate directives in different fields. In addition, policy debates are frequently mired in acrid ideological arguments and not implemented with the necessary precision. These shortcomings compromise the efficiency of the "open door" policy and engender inconsistency and vacillation.

Finally, the "open door" policy has brought certain negative Western cultural influences into China and created new tensions between different interest groups. Pornography has spread widely. Smuggling, corruption, the black market, and other illegal activities generally associated with increased foreign involvement in China have expanded rapidly. The gap in income and opportunity between those who work for foreign-involved enterprises and the rest of the population has widened, and this has posed a serious challenge to official ideology. Moreover, the intense competition to travel and study abroad has heightened tension between individuals and among various social groupings. Deeply rooted Chinese nationalism, in addition, has grown during the past year and a half. In the last few months of 1985, anti-Japanese student demonstrations took place in a number of large cities. Although ongoing party politics and dissatisfaction with inflation and the bureaucracy were also important, the major reason for the demonstrations was disaffection, indeed outright opposition, to the government's "open door" policy.[78] These political instabilities, if they continue and deepen, will undermine the legitimacy of the "open door" policy and jeopardize the political environment from which it has emerged.

The International Environment

The international economic and political environment has changed significantly in recent years. The world economy remains in a recession, and demand by developed countries for primary and manufactured goods from developing countries like China has been cut. The recession has also intensified competition for limited financial resources both internationally and within the markets of the developing countries themselves. As a result, China is finding it more difficult than ever to expand its exports, including those of grain and other agricultural products.

This is partially because the elasticity of demand for agricultural goods in the international market is not very great. More important, the competition for the international agricultural market among the leading exporters (China, the United States, Canada, Mexico, and the Common Market) has become increasingly tough. Unless China can further its institutional reforms and build a mechanism able to respond effectively to the dynamics of the international market, it will continue to have difficulties in upgrading its export structure successfully.

International protectionism in industrial market economies against both newly industrializing countries and other developing countries has been growing stronger. The United States, Japan, and Western Europe have adopted new restrictive policies against the

[78]See Shi Ronghan, "To March Under Storms," *Guangdong Shehui Kexue*, No. 4, 1985, pp. 1–11. In this article, the author indicated that there have been at least two "big storms" attacking the SEZ's. The first was in 1982 when the SEZ's were accused of being "new colonial sections." The second was in the first half of 1985 when the SEZ's were criticized as having been a "failure."

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import of manufactured goods from NIC's and other developing countries, including China. This protectionism has injured severely China's exports, both directly and indirectly. Under US government pressure, the GATT has recently passed a new resolution restricting even further the international textile trade.[79] This has hurt Chinese and Indian exports in particular. Direct exports, especially of textiles and other consumer goods, to industrial market economies have become far more difficult than before. Meanwhile, China continues to have huge trade deficits with Japan. Trade negotiations between China and Japan have not resulted in significant progress in allowing Chinese goods to enter the Japanese market, although Japanese officials have often made promises to ease restrictions.[80]

Together with the worldwide recession, this protectionism has scuttled Hong Kong's economic growth and hurt its exports. Whereas Taiwan's growth rate in GNP in 1985 was 4.7 percent, Hong Kong's was a mere 0.8 percent.[81] As a result, businessmen in Hong Kong have felt it increasingly difficult to function as agents in facilitating trade projects between China and other parts of the world.

Hong Kong's recent poor economic performance has had a significant impact on China's "open door" policy. During the past two decades, Hong Kong has been China's number one trade partner. More important, the amount of trade surplus that China had with Hong Kong from the late 1970's to 1984 was roughly equal to the amount of China's trade deficit with Japan and the United States.[82] In 1985, however, for the first time, China had trade deficits with Hong Kong.[83] During the past few years, moreover, Hong Kong has played a critical role in China's "open door" policy. Over 60 percent of total foreign investment in China is from Hong Kong. The same percentage of foreign-involved enterprises in China are indeed Chinese–Hong Kong joint undertakings. Hong Kong's economic decline has thus reduced financial resources available to China. Most foreign-involved enterprises in China, notably those using processing, joint-venture, and joint-management formats, have been heavily dependent on Hong Kong businessmen's knowledge of the international market and their business connections. The damage to Hong Kong's exports caused by international protectionism has thus indirectly hurt China's own exports.

Since October 1985, oil prices in the international market have dropped rapidly. China's oil exports, as noted earlier, now account for about one-fifth of its total exports. According to a Chinese survey, the price of Chinese crude oil in 1985 in the international market was between US$23 and $24 per barrel. For every drop of one US dollar per barrel, China will lose export income of US$200 to 300 million annually. It is projected, therefore, that China will lose between US$2 billion and $3 billion in 1986.[84]

The Xiamen International Bank, a joint venture of three Chinese national financial institutions and a Hong Kong finance company, opened in March 1986 in the Xiamen Special Economic Zone.

—Eastfoto.

Prospects for the Future

Will China's "open door" policy continue? The answer seems to be "Yes." This is because the reformers in China, who had appeared to have been fairly adept at arranging for the next leadership succession, have committed themselves to such a policy, and are likely to remain committed in the years ahead. More important, the current Chinese leadership has managed to sustain its "open door" policy despite challenges both domestically and internationally.

To a large extent, China's "opening to the outside world" has facilitated its ongoing political and economic reforms and provided the absolute preconditions for the current leadership's efforts to integrate China into the international community. It has also helped create a new generation of policy-makers who

[79]See, e.g., *Shijie Jingji Daobao*, Nov. 3, 1986, p. 5.
[80]See ibid., Mar. 10, 1986, p. 1, and May 26, 1986, pp. 1, 5.
[81]*The Asian Wall Street Journal*, Mar. 3, 1986, p. 11.
[82]*China Business Review*, March-April 1986, pp. 53–54.
[83]Ibid., March-April 1985, p. 55.
[84]*Liaowang*, Apr. 21, 1986, p. 5, and May 26, 1986, pp. 6–7.

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are more open-minded and have a broad perspective and international experience. It has, furthermore, made Western culture available to Chinese society, thereby narrowing the considerable gap between China and the West.

The "open door" policy has continued to increase the degree of interdependence between the Chinese and world economies. It has brought a large measure of foreign capital, technology, equipment, and management skills to China, thereby speeding up China's transformation into a modern industrial society and narrowing the institutional disparity between the Chinese economy and the industrial market economies. It has, at the same time, strengthened China's position in the international market. In the long run, it will likely have a strong impact on the process of China's development and upon China's overall relationship with the outside world.

But if China's "open door" policy is to be effective it must be adjusted and readjusted in light of its past shortcomings. It must be anchored by a long-term strategy based on concrete, detailed, and careful analysis of China's domestic needs and the dynamics of its international environment. It must be the product of consistent and predictable government policy. And it must be adjusted through carefully prepared and skillfully orchestrated policy modifications.

In practical terms, for the most part, this means proceding along lines already in place, albeit at a somewhat accelerated pace. For example, the RMB should be further depreciated, and prices in the Chinese domestic market should be gradually linked directly to prices in the international market place. Capital, labor, and producer goods markets need to be built up, and government financial and fiscal subsidies to export enterprises reduced. Favorable conditions and inducements designed to attract foreign investment should be continued, and foreign investors' share in China's domestic market ought to be defined clearly and protected by law. Profits made in China by foreign investors should be totally at their disposal and easily converted into hard currency.

Such measures will fall well short of the mark, however, if enterprises are not granted greater autonomy. Economic decision-making at the enterprise level must be further decentralized and depoliticized in order to allow for greater initiative, creativity, and the capacity to respond to changes quickly and decisively. Thus, party and government intervention in the *business* activities of enterprises should be reduced and ultimately eliminated, and experienced technicians and professional managers, not party bureaucrats, should be the enterprise's primary decision-makers. Enterprises also ought to be allowed to deal with foreign corporations directly, and Chinese legal institutions must be adapted in such a way as to protect enterprises' rights and interests.

Internationally, China should continue to work through diplomatic channels, jointly with other developing countries and NIC's, to urge developed countries, notably Japan and the United States, to remove protectionist barriers against Chinese goods as well as restrictions against the transfer of advanced technology to China. It should also take special care to develop and refine regional and subregional trade ties and cooperation, especially in the Asia-Pacific area, notably with Taiwan and South Korea. More important in terms of the immediate future, China should help Hong Kong stabilize its economic growth so as to alleviate China's trade deficit.

The unfolding of China's "open door" policy has contributed to the overall economic prosperity of the international community as well as to international stability, especially in the Asia-Pacific region. Continued economic cooperation and the concomitant integration of economies will no doubt have a long-term effect on the development of China's relations with other parts of the world, especially with the West, including Japan. But if China is to succeed in its "opening to the outside world," it must have the support of industrial market economies, in the form of both investment in China and the removal of trade restrictions against Chinese goods and the transfer of technology. Indeed, unless China can increase its exports, industrialized countries cannot expect to expand their sales to China significantly. In the long run, however, it is the continued expansion of cultural and educational exchange programs that will most likely reap the greatest reward—the building of mutual understanding and trust between the young generation in China and that in the West and in Japan.

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Note

Special Economic Zones in the PRC

Joseph Fewsmith

NO ASPECT of China's policy of "opening to the outside world"[1] has proven more controversial than the decision, attributed directly to Deng Xiaoping,[2] to create Special Economic Zones (SEZ's) for purposes of drawing in foreign capital, stimulating exports, and gaining exposure to modern technology and management. The parallel between the zones—with their special privileges for foreigners and special administrative status—and China's 19th-century treaty port concessions governed by foreigners under the doctrine of extraterritoriality is apparent enough to require frequent refutation. "Can these zones turn into new concessions and colonies?" asks a typical commentary. They cannot, it is maintained, because "the economic leadership power in the special zones is in our hands."[3] Despite considerable success in developing the SEZ's and the extension of some of their special arrangements to additional coastal cities, the institution continues to have its foes.

The experiment with the SEZ's dates from April 1979, when a central work conference presided over by Deng Xiaoping called for their establishment. After investigations led by CCP Secretariat member Gu Mu, the party Central Committee and the State Council formally set aside areas of four cities—Shenzhen, Zhuhai, and Shantou in Guangdong province and Xiamen in Fujian province—for starting such zones on a trial basis. These actions were sanctioned when the Standing Committee of the National People's Congress in August 1980 promulgated "Regulations for the Guangdong Special Economic Zones" and officially approved the setting-up of the SEZ's.[4]

The zones, which are to act as laboratories for economic and management reform, are under the dual leadership of the central and provincial governments. At the central level, there is a Special Economic Zones Planning Office under the State Council, and Gu Mu oversees the development of the zones and implementation of the policy of opening to the outside world on behalf of the party. At the local level, there is a Special Economic Zones Administrative Office under the Guangdong Provincial Government. The mayor of Shenzhen has traditionally served as a vice-governor of Guangdong.

Of the four zones, Shenzhen has experienced far and away the most rapid development, drawing the bulk of government investment and attention. In only four years, from 1979 to the end of 1983, Shenzhen developed from a small border town of 20,000–30,000 people into a city of some 300,000. In the same period,

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[1]Chinese media strongly prefer the term "opening to the outside world" *(duiwai kaifang)* and self-consciously avoid the term "open door policy" *(menhu kaifang zhengce)* because of its connotations of the old imperialist order. See Wu Cheng, " 'Opening to the Outside World' and the 'Open Door'," *Gongren Ribao* (Beijing), Feb. 14, 1986, p. 3, translated in Foreign Broadcast Information Service, *Daily Report: China* (Washington, DC—hereafter *FBIS-CHI*), Feb. 21, 1986, pp. K/4–5. This article will follow the Chinese-preferred usage, despite its cumbersomeness.

[2]Zeng Jianhui, "The Birth of an Important Political Decision—A New Step in Opening the Country to the Outside World," *Liaowang* (Beijing), No. 24, June 11, 1984, pp. 9–13, trans. in *FBIS-CHI*, June 18, 1984, pp. K/1–7. This was affirmed by Liang Xiang, then mayor of Shenzhen, who said that during his inspection of Shenzhen, Deng had stated, "It is I who proposed running the special economic zone . . . ." See "Liang Xiang on Background to Deng Xiaoping's Remarks," *Wen Wei Po* (Hong Kong), July 13, 1985, p. 3, trans. in *FBIS-CHI*, July 15, 1985, W/3–4.

[3]Guangdong provincial radio, Sept. 4, 1981, trans. in *FBIS-CHI*, Sept. 9, pp. P/1–2.

[4]Zeng Jianhui, loc. cit.

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some 1.9 billion yuan were invested in capital construction, and some 2,500 contracts were signed with foreign investors. Development of the other three SEZ's has proceeded much more cautiously.[5]

By the beginning of 1984, the SEZ's seemed to be doing so well that Deng Xiaoping claimed during a visit to Shenzen that its "development and experience prove that our policy for setting up the zones is correct."[6] During the spring of 1984 there developed a veritable "learn from Shenzhen" campaign. In April, it was announced that an additional 14 coastal cities would be opened to foreign investment on a preferential basis—a decision that was largely justified by reference to Shenzhen's experience. At the October 1, 1984, Beijing observance of the 35th Anniversary of the Founding of the PRC, there was even a Shenzhen float in the parade proudly displaying the slogan of that city's Shekou industrial zone: "Time is money and efficiency is life." Moreover, at the Fourth Conference of the Chinese Writers' Association, in December 1983, State Councillor and then party Secretariat member Gu Mu indicated that three new areas—the Liaodong and Jiaodong peninsulas, and a triangular area in southern Fujian province—would also be "opened" economically.[7]

These developments were all part of a long-term policy. Gu Mu told the 9th meeting of the 6th National People's Congress (NPC) Standing Committee in January 1985 that

the general trend of our opening to the outside world is a gradual development from south to north, from east to west, and from coastal areas to the interior. . . . The faster a country's economic development, the bigger strides it will take in using foreign capital, importing technology, and developing trade. It has become a trend of economic development in the present world for a country to open itself to the outside world and develop economic exchange with foreign countries to promote and accelerate its own economic construction.[8]

Comments by Premier Zhao Ziyang made during a November 1984 tour of the Pearl and Yangtse river deltas (sites of the Zhuhai and Shenzhen SEZ's and of some "open cities"—see map on p. 62) more closely linked economic construction in coastal areas with the broader development of the Chinese interior:

The special economic zones, open cities, and economically open zones are the bridgeheads in our opening to the outside world, and they should play the role of a springboard. On the one hand, they should import advanced foreign technology, equipment, and management and operations methods; absorb and digest them; apply them in innovations; and transfer them to the interior. On the other hand, they should sell commodities produced in the coastal areas with foreign technology to the interior, and export the latter's raw materials and produce, with added value after processing here, to the international market, in order to achieve better economic results. In a figurative sense, the special economic zones and open cities are like the intersection of two lines, forming two fan-shaped sectors, embracing the introduction of foreign technology and cooperation with the interior.[9]

The account of Zhao's tour in a pro-PRC Hong Kong newspaper did note the premier's reservations about "rampant" black market activities in Guangzhou, Shenzhen, and Zhuhai, as well as the tendency of the zones to make money off the interior rather than producing goods for export. But these matters were apparently secondary. Zhao reportedly went so far as to announce (with misplaced confidence) that China had "managed to solve the problem of imbalance in foreign exchange once and for all."[10]

Growing Economic Concerns

Even as Zhao spoke, however, adverse economic developments were creating a political climate in which long-standing doubts in some circles regarding the legitimacy of the SEZ's and the pace and scope of opening up could be expressed. Indeed, by early summer 1985, Deng himself beat a retreat, labelling the Shenzhen SEZ an "experiment," the success of which "remains to be proven,"[11] and Gu Mu announced that China would "give priority" to only four of

[5]Liang Xiang, "The Policy of Developing Special Economic Zones Is Entirely Correct," *Renmin Ribao* (Beijing), Mar. 29, 1984, trans. in *FBIS-CHI*, Apr. 6, 1984, P/1–5.

[6]Xinhua, Feb. 1, 1984, trans. in *FBIS-CHI*, Feb. 2, 1984, pp. K/8–9.

[7]*South China Morning Post*, (Hong Kong), Jan. 4, 1985, reprinted in *FBIS-CHI*, Jan 4, 1985, p. W/3.

[8]Xinhua, Jan. 17, 1985, trans. in *FBIS-CHI*, Jan. 23, 1985, pp. K/5–16.

[9]Xinhua, Dec. 25, 1984, trans. in *FBIS-CHI*, Dec. 26, 1984, K/1–3. Elsewhere, Zhao had spoken of the open areas as "pivots for foreign imports and domestic coordination." See Lan Ching-chung, "Premier Zhao's Report on His Inspection of Guangdong and Jiangsu," Parts I and II, *Wen Wei Po*, June 15 and 16, 1985, p. 2, trans. in Foreign Broadcast Information Service, *China Report: Economic Affairs* (Washington, DC—hereafter *JPRS-CEA*), No. 85-024, Mar. 12, 1985, pp. 89–95.

[10]Lan Ching-chung, loc. cit.

[11]Xinhua, June 29, 1985, trans. in *FBIS-CHI*, July 2, 1985, p. I/1.

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the fourteen open cities—Shanghai, Tianjin, Dalian, and Guangzhou—and temporarily "slow down" the development of foreign cooperation in the other ten.[12] What had happened?

In the last quarter of 1984, rapid expansion of individual and collective consumption funds helped stimulate a rapid increase in imports of foreign goods to soak up the excess currency. In addition, loosening of controls over foreign trade and acceleration of the policy of opening provided opportunities for profit-making (sometimes corrupt) from imports. The result was a rapid and disproportionate increase in imports and a correspondingly rapid decrease in foreign exchange reserves. In the last quarter of 1984 and the first quarter of 1985, China's foreign exchange reserves fell by about one-third.[13]

The Beijing government moved quickly in an attempt to regain control over the foreign exchange situation. On March 21, an expanded role for the People's Bank of China in the nation's foreign commerce was signaled with the appointment of then State Councillor and alternate Politburo member Chen Muhua as its director.[14] On April 5, the State Council's General Administration of Exchange Control promulgated "Rules for the Implementation of Punishment for Violation of Foreign Exchange Controls."[15] And on April 20, *Guoji Shangbao* reported that the Foreign Trade Administration of the Ministry of Foreign Economic Relations and Trade had formulated several measures calling on provincial economic and trade organizations to "strengthen foreign trade management, supervision, and examination."[16] Also in April, the State Council convened a meeting of provincial governors, which addressed the issue of foreign exchange.[17]

These developments strongly suggested that the former free-wheeling operations of the SEZ's were coming under closer, critical scrutiny. A newspaper editorial urged the SEZ's to establish "externally oriented economies" and warned that the zones "cannot depend over a long time on state foreign exchange support."[18] A number of sources put their finger on the major issue—it was more profitable for enterprises in the SEZ's to sell imports on the domestic market than to develop products for export. A seminar on the theory and policy of opening to the outside world held in Guangzhou on April 4–9, 1985, concluded that the current foreign exchange rate "often makes export trade gain limited profits or even cause huge losses," while making it possible for "import trade to gain huge profits on the domestic market." This resulted in "speculating in foreign exchange," which was not the objective of "opening the country to the outside world." The meeting maintained that it was necessary to reform the foreign exchange control system in order to prevent state funds from being used for private purposes, to eliminate the "obvious dual foreign exchange rate," and to guarantee the foreign exchange earnings needed by the state.[19]

In mid-May, State Councillor Zhang Jingfu told a national meeting on the work of soliciting foreign capital that "the projects selected should meet the needs of our national economic development."[20] An authoritative article in the party daily the same day complained that economic units in the coastal areas had imported "large quantities of equipment and raw materials" and had used "large amounts of foreign exchange," but had sold their products primarily on the domestic market. "Unless we pay attention to this problem and adopt prompt measures to deal with it," the article warned, "the foreign exchange problem may adversely affect the benign economic cycle in these areas in two or three years' time."[21]

More stringent measures to control foreign exchange and concentrate economic resources of the SEZ's and open cities were soon to come. In late June, as noted above, Gu Mu announced that China would henceforth "give priority" to only four of the 14 open

[12]Xinhua, June 29, 1985, trans. in *FBIS-CHI*, July 16, 1985, p. D/1.

[13]According to Chen Muhua, Chinese foreign exchange reserves stood at US$16,674 million in September 1984 and $14,420 million in December. By the end of March 1985, reserves had fallen to $11,262 million. See Yeh Chi-jung, "Chen Muhua Received Hong Kong and Macao Reporters This Morning," *Hsin Wan Pao* (Hong Kong), Mar. 31, 1985, p. 1, trans. in *FBIS-CHI*, Apr. 1, 1985, pp. W/8–9; and *Zhongguo Xinwen She* (Beijing), July 6, 1985, trans. in *FBIS-CHI*, July 8, 1985, p. K/20.

[14]On the appointment, see Xinhua, Mar. 21, 1985, trans. in *FBIS-CHI*, Mar. 21, 1985, p. K/10. For the commentary, see Chang Chien-hua, "Growing Importance of Financial Work; China Strengthens the Role of the People's Bank," *Wen Wei Po*, Mar. 23, 1985, p. 1, trans. in *FBIS-CHI*, Mar. 25, 1985, p. W/2.

According to one account, the "overwhelming majority" of domestically run enterprises in Shenzhen took advantage of the zone's preferential policies to import parts duty-free, assemble them, and sell the resulting products on the home market. In 1984 alone, such enterprises imported some $320 million in parts and exported only $42.2 million. See *Jingji Ribao* (Beijing), Feb. 22, 1986, trans. in *FBIS-CHI*, Mar. 5, 1984, pp. P/1–8.

[15]Xinhua, Apr. 8, 1985, trans. in *FBIS-CHI*, Apr. 19, 1985, pp. K/17–20. The rules reportedly had been approved by the State Council on March 25.

[16]Trans. in *FBIS-CHI*, May 10, 1985, pp. K/18–19.

[17]Tian Jiyun referred to this meeting at a subsequent conference of cadres of central organs. See Tian Jiyun, "Issues Concerning the Current Economic Situation and Reforms of Economic Structure," Xinhua, Jan. 11, 1986, trans. in *FBIS-CHI*, Jan. 13, 1986, p. K/12.

[18]*Guoji Shangbao*, Apr. 4, 1985, p. 1 editorial, trans. in *FBIS-CHI*, Apr. 16, 1985, pp. K/8–9.

[19]Lin He, "Roundup of the Seminar on the Theory and Policy of Opening to the Outside World," *Renmin Ribao*, May 17, 1985, p. 5, trans. in *FBIS-CHI*, May 24, 1985, pp. K/5–7.

[20]Xinhua, May 16, 1985, trans. in *FBIS-CHI*, May 21, 1985, pp. K/8–9.

[21]*Renmin Ribao*, May 16, 1985, p. 2, trans. in *FBIS-CHI*, May 20, 1985, pp. K/10–11.

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cities. A July conference of the governors and mayors of the 14 open coastal cities, four SEZ's, and Hainan Island reportedly "reaffirmed that China's open-door policy should develop steadily and healthily," but that in light of "new problems" occurring in the open cities over the previous year—including foreign exchange imbalances and excessive lending and building—the scale of capital construction in the open cities should "not be too large" and the capital construction budgets of the Shenzhen, Zhuhai, and Xiamen SEZ's should be scaled back.[22] In an interview with the *South China Morning Post*, Zou Erkang, secretary general of the Shenzhen SEZ, confirmed that funds for economic construction in the zone had been cut by one-third, from an originally budgeted 2.5 billion yuan to 1.6 billion yuan (the same as in 1984).[23] These figures were repeated in a *Wen Wei Po* account, which added that Xiamen's 1-billion yuan budget would be reduced to 800 million and Zhuhai's expenditures would remain within the 1984 budget figure of 340 million yuan.[24]

Policy Debate

It was in this setting that Deng Xiaoping took his more reserved position vis-à-vis the SEZ's. Clearly a high-level debate was raging over the development (perhaps even the very legitimacy) of the zones. Even before the depth of the economic problems was publicly exposed, a December 1984 symposium of "young and middle-aged research workers" on matters of world economics demonstrated widely divergent views over the pace and scope of China's policy of opening to the outside world.

Most striking, in light of the view often cited by Chinese media that the theoretical basis of China's open policy lay in Lenin's arguments for NEP, some participants argued that the NEP was the "product of specific Soviet historical circumstances" and that in theoretical terms Lenin regarded it as "one step backward from socialism." Moreover, critics of current policy argued that "our strategy of 'exchanging markets for technology' may end up by giving away our market but getting no technology." In addition, objections were raised to the development of commerce between the interior and the coastal areas on the grounds that a "one-way flow of funds" is bound to develop, which will "further enlarge the gap in the level of economic development between coastal and inland areas."[25]

In the spring of 1985, about the time that China's foreign exchange difficulties were being aired in public, central dailies *Renmin Ribao* and *Guangming Ribao* reprinted an article from the Guangzhou paper *Yangcheng Wanbao* sharply critical of the management of Shenzen's Shekou industrial zone.[26]

Shortly thereafter, Vice-Premier Yao Yilin inspected Shenzhen and reportedly told Yuan Geng that the zones could not continue to depend on "blood transfusions"—i.e., subsidies—from the state. Yuan reportedly countered that the transfusions could not be stopped abruptly, for that would put the very life of the SEZ's "in danger."[27]

Further evidence that the SEZ's had become a matter of contention at the highest levels came when Politburo member Hu Qiaomu wrote an article in the internal publication *Zuzhi Renshi Xinxi Bao* (Bulletin of Organization and Personnel), that was picked up first by the Hong Kong newspaper *Ming Pao* and then excerpted in the PRC legal-affairs newspaper *Zhongguo Fazhi Bao*. In the first such high-level attack on the SEZ's known to have been reported in publications available outside China, Hu sharply criticized the zones, evoking their similarities to the foreign enclaves in the 19th-century treaty ports. Hu recalled that "the Qing dynasty adopted an indifferent attitude" toward the concesssions, at the expense of "China's legal rights." He suggested that the present Chinese government had already gone too far in yielding to the "inordinate demands" of foreigners, and he demanded to know why the Chinese Communist Party "is prohibited from public activities" in foreign investment enterprises in the zones. Moreover, Hu charged, foreign businessmen "show no respect" for Chinese unions and "forget even the laws of their own countries when they come to the SEZ's."[28]

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[22]Kuang Yu, "State Council Holds Conference on Special Zones and Open Cities," *Wen Wei Po*, July 7, 1985, p. 1, trans. in *FBIS-CHI*, July 9, 1985, pp. W/7–8.

[23]*South China Morning Post*, July 2, 1985, in *FBIS-CHI*, July 11, 1985, pp. W/8–9. (At that time, the official exchange rate was approximately 3.7 *yuan* to the dollar).

[24]Kuang Yu, loc. cit.

[25]"On the International Environment of China's Open Door—Summary of Views at the Symposium on World Economics of Young and Middle-Aged Research Workers," *Shijie Jingji* (Beijing), No. 2, Feb. 10, 1985, pp. 25–29, trans. in *JPRS-CEA*, No. 85-084, Sept. 19, 1985, pp. 1–8.

[26]"Shekou Leader's Democratic Style Is Good; Yuan Geng Supports Newspaper Criticizing Him by Name," *Yangcheng Wanbao*, Mar. 21, 1985, p. 1. The article was reprinted with slight variations on the back page of *Renmin Ribao* and the front page of *Guangming Ribao* on March 23.

[27]See *Ming Pao* (Hong Kong), June 4, 1985, p. 6, trans. in *JPRS-CEA*, No. 85-063, July 16, 1985, pp. 122–23. *Ming Pao*'s account was based on coverage in the local newspaper, *Shekou Tongxun*.

[28]"Hu Qiaomu Warns in Xiamen that Foreign Investment Enterprises Are Not Concessions; Their Inordinate Demands Cannot Be Given Tacit Consent," *Ming Pao*, June 22, 1985, trans. in *FBIS-CHI*, June 24, 1985, p. W/8; and "Special Economic Zones Are Not Special Political Zones; China's Laws Must Be Upheld, Says Hu Qiaomu," *Zhongguo Fazhi Bao* (Beijing), June 28, 1985, trans. in *FBIS-CHI*, July 8, 1985, pp. K/18–19.

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The debate was continued by two historical allegories appearing in the central press. The first, written by Chen Xulu, a senior historian in Shanghai, appeared to take issue with Hu Qiaomu's views. According to Chen, conservatives in modern Chinese history "held that only by rejecting all things foreign was it possible to demonstrate the greatness of the Chinese nation." This stance, however, did not reflect true patriotism. On the contrary, argued Chen, "every sober-minded and far-sighted patriot was surely a person who integrated resisting aggression with learning from the West." In a barb that seemed directed at Hu Qiaomu, Chen declared that patriots in modern Chinese history include "those who became the targets of attack for advocating the need to make temporary concessions to foreign countries."[29]

An apparent response to Chen's article appeared on the history page of *Guangming Ribao* in November. Written by one Liao Zonglin, it rebutted Chen by name without explicitly citing the *Renmin Ribao* article. Calling Chen's thesis "metaphysical," Lin stated that the peaceful attitude of the Qing Court in the years after the 1894–95 Sino-Japanese War had, in fact, encouraged further foreign aggression, "making China a laughing stock in history" and "failing to play the slightest role in protecting state sovereignty and territorial integrity."[30]

In the course of this debate, local officials began to weigh in on behalf of Shenzhen. For example, on July 8 the *Hong Kong Standard* reported that Zou Erkang, secretary general and chief government spokesman of the Shenzhen SEZ, almost directly contradicting Deng Xiaoping's equivocal statement of only a week earlier, claimed that "after five years of experimenting with the open policy in the SEZ's, we are certain that it works."[31] And Shenzhen Mayor Liang Xiang told a meeting of Hong Kong businessmen that Shenzhen's industrial output in the first half of the year—almost double that of same period in the previous year—"testified to the success of the experiment." Moreover, Liang denied that Shenzhen relied on "blood transfusions" from the state; he claimed that less than 6 percent of investments in Shenzhen came from the state treasury.[32]

The most extensive defense of the SEZ's performance was made by Zou Erkang in a *Ta Kung Pao* interview. Zou seemed to place the blame for excessive foreign exchange expenditures squarely on other governmental units, including central government ministries and commissions. According to Zou, there was no problem with the balance of foreign exchange in the case of either wholly foreign-owned enterprises or Sino-foreign joint ventures. In recent years, however, various state-run enterprises had been established in Shenzhen by central authorities as well as by provincial and city governments. These enterprises, Zou claimed, "use their own foreign exchange" to import electronic parts for assembly. But the finished products "cannot compete . . . on the international market," and therefore "can only be sold at home for *renminbi* [China's currency]." "Their entire business," Zou said, "is subsidized by the state with foreign exchange." In addition, Zou defended Shenzhen against charges that it was profiteering off the interior. He noted that it was economic units of the central government, provinces, and cities that were establishing enterprises in Shenzhen because "they know they can make money."[33]

The Hainan Scandal

The wave of criticism of the SEZ's seems to have crested with the scandal surrounding Hainan Island's excessive use of foreign exchange to import some 89,000 foreign autos and 2 million television sets with the intention of reselling them for large profits in China's interior. The case surfaced on May 8, when Hainan radio reported that Hainan's party secretary Yao Wenxu had two days earlier engaged in a self-criticism admitting that the island had "violated state regulations on foreign exchange control, fraudulently purchased foreign exchange, and disrupted the foreign exchange control market."[34] This account, coming as it did on the heels of a two-month investigation by the Central Discipline Inspection Commission (CDIC) seemed to indicate that the matter had been resolved. However, the publication of the CDIC's findings was delayed until July 31, suggesting high-level conflict

[29]Chen Xulu, "Patriotism in China's Modern History," *Renmin Ribao*, Aug. 2, 1985, trans. in *FBIS-CHI*, Aug. 13, 1985, pp. K/13–17. In his "Preface to '80 Years of Modern China'," printed in *Renmin Ribao* on August 5, 1983, Chen wrote that "most of the far-sighted Chinese who advocated learning from the West were stirred by foreign aggression and the disgrace of being inferior to others. . . . However, at the very beginning, almost all of them were misunderstood and censured by people. . . . The question of whether or not to study Western learning was always expressed as the conflict between the new and old or as the acute struggle between feudalism and antifeudalism." This articles is translated in Joint Publications Research Service, *China: Political, Sociological and Military* (Washington, DC), No. 452, JPRS 84245, Sept. 2, 1983.

[30]Liao Zonglin, "On the Question of Patriotism and National Betrayal During the Boxer Rebellion," *Guangming Ribao*, Nov. 27, 1985, p. 3, trans. in *FBIS-CHI*, Dec. 11, 1985, pp. K/9–12.

[31]See *FBIS-CHI*, July 10, 1985, p. W/2.

[32]Xinhua English, July 7, 1985.

[33]"Special Interview—Zou Erkang Speaks on a Number of Problems in Shenzhen's Development," *Ta Kung Pao* (Hong Kong), July 26, 1985, pp. 4–5, trans. in *FBIS-CHI*, Aug. 1, 1985, pp. W/1–7.

[34]Hainan Island Service, May 8, 1985, trans. in *FBIS-CHI*, May 15, 1985, pp. P/1–3.

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over how to handle the case. Further suggestive of disagreement was the report's finding that responsibility lay "to a certain extent" with an official of the Market Department under the State Industrial and Commercial Administration, a sign that some may have argued for less harsh treatment of Hainan leaders on the grounds that their actions did have some basis in state policy.[35]

Guangdong party leader Lin Ruo and CCP elder Chen Yun appeared to take a particularly harsh view of the Hainan case. Lin, whose first task after taking over responsibility of the Guangdong party committee in the spring of 1985 was to deal with the Hainan situation, stated that "some comrades" viewed the actions of Hainan party leaders as an "error" and hence seemed to argue that they should be treated leniently. Rejecting this view, Lin said that the incident "is certainly not an error, but a serious mistake," and hence that the CDIC's judgment is "absolutely correct."[36] Speaking to the CDIC plenum in September, Chen Yun specifically cited the Hainan automobile case, saying that in such cases the party committee must be held responsible.[37]

By contrast, State Councillor Gu Mu took a more relaxed view. Writing in the Shanghai economic paper *Shijie Jingji Daobao* on July 8, only one week after the publication of the CDIC investigation report, Gu Mu vigorously defended the SEZ's and the open policy. Avoiding all mention of the Hainan case, Gu noted that the existence of abuses had "brought ill repute to the policy of opening to the outside world," but argued that this work was something "entirely new" and that "some mistakes" will inevitably be committed. According to Gu, such mistakes "conform to the law governing the development of things, and there is no need to make a fuss about it or regard this as too serious a problem."[38]

The singling out of Hainan for criticism was itself suggestive of compromise. Although the case clearly also involved the Shenzhen SEZ,[39] publicity surrounding the publication of the CDIC's investigation report did not accuse that zone of wrongdoing. While critics of the zones could point to the Hainan scandal as casting doubt on the SEZ's and, in general, on the implementation of the policy of opening, defenders of the zones could dismiss the Hainan episode as an example of "localism" and seeking "loopholes" rather than view it as evidence that the policy of opening to the outside world was itself fundamentally flawed.[40]

Reorienting the SEZ's

While the special economic zones and related undertakings appear to have survived the flurry of criticism in the first half of 1985, it is clear that their role in China's future has been rethought. As noted above, planned construction funding from the state was cut back in mid-1985. In August, Li Hao, previously a deputy secretary of China's State Council, replaced Liang Xiang as mayor of Shenzhen, bringing with him a clear mandate to reorient the zone's investment strategy toward development of "outwardly-oriented industries."[41]

During the summer of 1985, members of the Economics Institute of the Chinese Academy of Social Sciences (CASS) and the Shenzhen party committee apparently joined in an effort to redefine and justify the future developmental path of the zones.[42] This investigation generated several articles authored by members of the Economics Institute. Two articles by Liu Guoguang, head of the institute and vice-president of CASS, appeared in *Renmin Ribao* in August.[43] In the first, Liu considered three possible developmental strategies for Shenzhen: an inward orientation, a "dou-

[35]See "Investigation report of the Central Discipline Inspection Commission," Xinhua, July 31, 1985, trans. in *FBIS-CHI*, Aug. 6, 1985, pp. P/1–8.

[36]Lin Ruo, "Draw a Lesson, Implement Policies, and You Will Have a Bright Future," *Nanfang Ribao* (Guangzhou), Aug. 4, 1985, pp. 1–2, trans. in *FBIS-CHI*, Aug. 8, 1985, pp. P/1–9.

[37]Chen Yun speech at the Sixth Plenary Session of the Central Discipline Inspection Commission, Xinhua, Sept. 26, 1985, trans. in *FBIS-CHI*, Sept. 26, 1985, pp. K/33–35.

[38]Trans. in *FBIS-CHI*, Aug. 2, 1985, pp. K/3–14.

[39]E.g., in an interview, Zou Erkang stated that during the period in which Hainan Island was importing cars for resale to the interior, various regions and units "carried *renminbi* in gunnysacks to Shenzhen to rush to purchase Hong Kong dollars at very high prices." From an interview with Zou and Li Hao by Li Kuo-chiang, "Shenzhen Mayor Li Hao Exclusively Interviewed by This Magazine's Reporter," *Kuang Chiao Ching* (Hong Kong), No. 160, Jan. 16, 1986, pp. 6–9, trans. in *FBIS-CHI*, Jan. 30, 1986, pp. W/4–11.

[40]E.g., a Commentator article in the party daily stated that the "major reason" the regional party committee members committed mistakes was that they "proceeded from the interests of their region and forgot the interests of the whole country." See "Learn the Lesson; Continue to Forge Ahead," *Renmin Ribao*, Aug. 1, 1985, p. 1, trans. in *FBIS-CHI*, Aug. 2, 1985, pp. P/1–3.

[41]Xinhua, Aug. 31, 1985, "It Is Necessary to Build Shenzhen Into an Outward-Oriented Special Economic Zone—Interview with Li Hao, Newly Elected Vice-Governor of Guangdong," trans. in *FBIS-CHI*, Sept. 4, 1985, pp. P/1–2. Although the ostensible reason for this change was the outgoing mayor's age (65), the 58-year-old Li's experience with the State Council suggests Beijing's interest in tightening central control over the zone. However, it was also apparent that authority over the zones was not being shifted out of the hands of the official primarily responsible for China's open policy, State Councillor Gu Mu, to whom Li had been a secretary. Liang Xiang was permitted to remain on the Shenzhen party committee for a while, but retired when the committee was reorganized in July 1986.

[42]He Fenghua, "The Question of the Shenzhen Special Economic Zone Developing an Outward-Oriented Economy," *Jingji Ribao*, Sept. 16, 1985, trans. in *FBIS-CHI*, Oct. 3, 1985, pp. P/1–4.

[43]"The Strategic Objective of Developing the Shenzhen Special Economic Zone," *Renmin Ribao*, Aug. 9, 1985, p. 5, trans. in *FBIS-CHI*, Aug. 15, 1985, pp. P/2–6; and "Development of the Shenzhen Special Economic Zone Faces a New Strategic Stage," *Renmin Ribao*, Aug. 12, 1985, p. 5, trans. in *FBIS-CHI*, Aug. 22, 1985, pp. P/1–5.

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ble-track" orientation stressing sales on both the domestic and the foreign markets, and an outward orientation. Liu concluded that "the Shenzhen SEZ should be built strictly in line with the requirements of an outwardly oriented economy." Explicit rejection of the "double-track" orientation—which had been ostensibly endorsed by Zhao Ziyang at the beginning of the year—marked an apparent concession to critics of the SEZ's.[44]

In the second article, Liu laid out a three-stage schema for the long-term development of Shenzhen. The first stage—from the founding of the SEZ to the present—appropriately concentrated on "laying a foundation," while the second and third stages should transform the zone into an export-oriented area that relies primarily on industry. Liu argued that although certain problems emerged in Shenzhen during the first stage of construction—including an excessive reliance on trade and real estate, a primarily domestic-market orientation, and an overemphasis on processing work—it would be wrong to "negate the achievements Shenzhen has scored in economic construction. . . ." Starting with the second period, it was necessary to "change the direction of the zone's economy," a task requiring an "appropriate reduction of speed" and a "tightening of macroeconomic control and strengthening of macroeconomic guidance."

Other articles seemed to reaffirm Liu's stress on an "outward orientation" of future SEZ economic activity. CASS member He Fenghua claimed in September that Shenzhen had already made significant steps toward achieving the strategic goal of an "outward-oriented economy dominated by the use of foreign capital, by industry, and by the production of export products."[45] Similarly, two other Economics Institute scholars, Dai Yuanchen and Shen Liren, argued for Shenzhen's development of an outward-oriented economy. They observed that if the zone retained its "present domestic-type economy, good interest and swift development might be gained from the gap [between domestic and foreign prices], but Shenzhen would be bound to be censored for getting rich on the back of the rest of the country, and contradictions between Shenzhen and the rest of the country would be deepened."[46]

Nevertheless, local actors still do not welcome the idea of an exclusively outwardly oriented future. For example, Wang Zhuo of the Guangdong provincial government's Commission for Reform of the Economic Structure maintained that it was necessary for Shenzhen to develop in both an inward and an outward direction, citing Zhao Ziyang's prescription that the SEZ's should act as "two sides of a fan and a pivot." Wang contended that to develop an exclusively "outward type" of economy—as advocated by Liu Guoguang—would force the zones to act as "export-processing zones" with a wall erected between the zones and the interior, preventing the zones from playing their proper role as a "window" for introducing technology, management, and knowledge.[47]

Yet Beijing seems firmly committed to the outward orientation, a view conveyed at a meeting of cadres of organs directly subordinate to the central government, apparently held in late autumn 1985. There Liang Xiang defended the performance of Shenzhen but promised that "industry will be taken as the leading factor, and steps will be quickened in developing an outwardly-oriented economy." According to published "excerpts" from his report, Liang also had to contend with charges of poor management, of economic crime, and of allowing there to be "weak links" in the construction of spiritual civilization. He said that an "Outline for Construction of Socialist Spiritual Civilization in the Shenzhen Special Zone" had been compiled, and—perhaps in response to Hu Qiaomu—he stated that more attention should be paid to the role of trade unions, the Communist Youth League, and women's federations in foreign-related enterprises.[48]

At the turn of 1985/1986, the State Council convened a conference in Shenzhen on the special economic zones, presided over by Gu Mu and attended by leaders of 29 departments of central authorities and the State Council. An interview with Li Hao and Zou Erkang revealed that Gu had mentioned a target of exporting 60 percent of Shenzhen's manufactured goods by the year 1990.[49] On January 6, 1986, the day

[44]The views that Liu attributed to advocates of the "double-track" orientation bear a striking resemblance to Zhao's description of the role of the open cities cited above. According to Liu, "these comrades maintain that since the Shenzhen SEZ is a pivot point of industrial and commercial contact between China and foreign countries, it should process materials from the hinterland for export and sell some of the parts and components they assembled from abroad to other areas of the country . . . . This view actually means that Shenzhen should bring into play its pivotal role between China and foreign countries."

[45]He Fenghua, loc. cit.

[46]"An Inquiry Into the Developmental Strategy of the Shenzhen Special Economic Zone," *Renmin Ribao*, Dec. 13, 1985, p. 5, trans. in *FBIS-CHI*, Dec. 19, 1985, pp. P/1–4.

[47]Wang Zhuo, "A Probe Into Some Questions on Special Economic Zones," *Renmin Ribao*, Oct. 7, 1985, trans. in *FBIS-CHI*, Oct. 18, 1985, pp. K/5–9. Wang was even more emphatic in a January 1986 article. See "Have a Clearer Understanding of the Special Economic Zones from Shenzhen's Experience," *Jingji Ribao*, Jan. 25, 1986, p. 1, trans. in *FBIS-CHI*, Jan. 31, 1985, pp. K/7–10.

[48]Liang Xiang, "Construction and Developing in the Shenzhen Special Economic Zone," *Jingji Ribao*, Dec. 11, 1985, p. 3, trans. in *FBIS-CHI*, Jan. 24, 1986, pp. P/1–12.

[49]Xinhua, Jan. 6, 1986, trans. in *FBIS-CHI*, Jan. 9, 1986, pp. K/8–9; and Li Kuo-chiang, loc. cit.

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after this conference closed, Gu presided over the inauguration of the Shenzhen Electronics Corporation, a conglomerate under the management of the Ministry of Electronics.[50] The establishment of the conglomerate appeared to symbolize central commitment to the development of a technology-based, export-oriented zone.[51] Two weeks later *Ta Kung Pao* similarly reported that the Ministry of Aeronautics, "in order to help the Shenzhen Special Economic Zone set up an outward-ly-oriented industrial system," had decided to establish the Shenzhen Shenbao International Technology Development Company.[52]

In early 1986, it was apparent that a compromise regarding the orientation of the SEZ's had been worked out. A February 1 Commentator article in *Renmin Ribao* (the first such authoritative treatment of the zones in the party daily in over a year) entitled "Take Business Overseas—Special Economic Zones Should Develop an Outward-Oriented Economy" stated that "the outward-oriented economy and the hinterland economy are complementary to each other."[53] Li Hao had gone even further in an article for the party theoretical journal in January, where he stated that Shenzhen was "a component part of our country's unified socialist market," and argued that "only by closely cooperating with the hinterland, developing each other's strong points and overcoming each other's weak points, and relying on the hinterland, will Shenzhen be able to develop more quickly."[54]

Conclusion

The open criticisms of the SEZ's by Hu Qiaomu, the conflicting historical allegories in the press, the crackdown on Hainan Island, the change of leadership in Shenzhen, the academic discussions on the proper orientation for Shenzhen, the convening of high-level meetings, and (most significant) Deng Xiaoping's own decision to distance himself from his previous wholehearted endorsement of the zones, all suggest that throughout 1985 there was prolonged and strenuous disagreement at the highest levels over the role of the zones and the course of opening to the outside world. Although criticism of the SEZ's failed to shake Beijing's commitment to them—if that was even the goal—it did force significant modifications of policy.

In terms of guiding policy, there was an apparent shift from the "two-fan" approach endorsed by Zhao Ziyang to the "outward orientation" approach adopted by the December 1985–January 1986 State Council meeting on the SEZ's. Collateral efforts to tighten control over foreign trade, expand exports, and step up ideological and political work in the zones appear to reflect this shift. In addition, capital construction expenditures in the zones, particularly Shenzhen, were curtailed.

By the end of 1985, however, it appeared that defenders of the zones had scored notable successes. In particular, recent affirmations of Shenzhen's experience by Gu Mu, Liang Xiang, Li Hao, and others, suggest that tensions over the SEZ's have been resolved largely in favor of the zones. Although the enunciation of an "outward orientation" with an emphasis on industry may have marked a setback for those, like Wang Zhuo, who favor a more open, free-trading approach, it nonetheless defined a more coherent rationale for the zones, one perhaps less subject to attack. In addition, the articulation of schema for the development of the zones in stages seems to imply that the mistakes of the first stage—the presumed cause of recent tensions—can now be relegated to the past. And while the zones' budgets for capital construction are to be reduced, it appears that Beijing will support the development through the establishment of some high-technology firms there.

The surfacing of such serious controversy, however, indicates that the ability to challenge important aspects of the Dengist reform program remains significant, even in a period in which the Dengist leadership was moving rapidly and apparently successfully to consolidate its authority. That it was possible to mount such an attack at such a time was undoubtedly due to the rapid fall in foreign exchange reserves, the related tendency of the zones to make money off the interior, and the degree of corruption associated with them. Deng's policies have been vulnerable to attack in periods of economic setback in the past,[55] and the recent criticisms of SEZ policy similarly suggest that the long-term viability of the Dengist program continues to rest heavily on scoring continuous and impressive economic achievements and on the ability to control corruption within acceptable limits.

[50]Xinhua, Jan. 6, 1986, trans. in *FBIS-CHI*, Jan. 9, 1986, pp. K/9–10.

[51]See *Zhongguo Xinwen She*, Jan 6, 1986, trans. in *FBIS-CHI*, Jan. 8, 1986, pp. K/9–10.

[52]*Ta Kung Pao*, Jan. 20, 1986.

[53]Trans. in *FBIS-CHI*, Feb. 4, 1986, pp. K/5–6.

[54]Li Hao, "Striving For a New Situation in Building Special Zones," *Hongqi* (Beijing), No. 1, Jan. 1, 1986, trans. in Foreign Broadcast Information Service, *China Report: Red Flag* (Washington, DC), No. 86-004, Feb. 13, 1986, pp. 29–38.

[55]See H. Lyman Miller, "The Politics of Reform in China," *Current History* (Philadelphia), September 1981, pp. 258–73.

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Books

Indochina's Continuing Tragedy

Robert S. Ross

ELIZABETH BECKER. *When the War Was Over: The Voices of Cambodia's Revolution and Its People*. New York, Simon and Schuster, 1986.

NAYAN CHANDA. *Brother Enemy: The War after the War*. New York, Harcourt Brace Jovanovich, 1986.

CHANG PAO-MIN. *Kampuchea Between China and Vietnam*. Singapore University Press, 1985.

WILLIAM DUIKER. *Vietnam Since the Fall of Saigon*, rev. ed., Athens, OH, Center for International Studies, Ohio University, 1985.

HEMEN RAY. *China's Vietnam War*. New Delhi, Radiant Publishers, 1983, distributed by Humanities Press, Atlantic Highlands, NJ.

IN RETROSPECT, Vietnam's 1978 occupation of Kampuchea (Cambodia) and China's February 1979 attack on Vietnam seem to be part of the natural progress of Southeast Asia's postwar geopolitical history. Although these events involved new actors and new alignments, the hostilities between Vietnamese and Cambodian Communists and the ensuing Sino-Vietnamese border war now appear to have been the inevitable next stage of the Indochina conflict after the withdrawal of the United States from Vietnam.

Nonetheless, this latest round of hostilities took many observers by surprise. Whatever their positions on United States policy toward Indochina during the 1960's and 1970's, most analysts had presumed that the war would be followed by a period of relative stability, during which Vietnam would focus its energies on unification and development while consolidating friendly relations with the new Communist governments in Laos and Cambodia. The escalating conflict between Hanoi and Phnom Penh and the Vietnamese military occupation of Cambodia were far from the expected scenario. The Pol Pot regime's self-defeating and destructive foreign policies, Beijing's de facto anti-Vietnamese alliance with the Khmer Rouge, and the brutality of the communist organization in Cambodia, were also something of a surprise. Although there had been a history of friction between Hanoi and Beijing, Hanoi had hitherto navigated the perilous waters of the Sino-Soviet conflict so successfully that few foresaw Vietnam's concluding a friendship treaty with the Soviet Union and fighting a war with China within less than four years of the fall of Saigon.

That these important developments and the consequent polarization of Indochina into warring blocs took US observers by surprise merely highlights the need for Americans to continue to work at understanding the politics of the region, despite sentiment for pushing Indochina back into the deep recesses of the national consciousness. The books under review here go a long way toward providing such an understanding by explaining the issues of the ongoing war in Indochina and their importance.

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Vietnam-Cambodia Conflict

IN THE 1960's and 1970's, the United States contributed to a lessening of overt friction among the potential enemies in the region by assuming the role of the common enemy. At the same time, while many observers recognized that Indochina was not a monolithic bloc, analysts were more often than not either unaware of the significant divisions within the Khmer Rouge and between the Cambodian and Vietnamese Communists or else chose to underplay them. This changed only when the Vietnamese-Cambodian conflict gradually became apparent, starting in May 1975, when Vietnamese and Cambodian forces, fresh from having attained victory in their respective struggles, clashed for control of various islands in the Gulf of Thailand, and continuing until December 1977, when Phnom Penh broke diplomatic relations with Hanoi and gave public coverage to their bloody border war.

Nonetheless, as the authors of all the books under review here indicate, tensions between the Pol Pot wing of the Khmer Rouge and the Vietnamese leadership can be traced back as far as the 1960's. Thus, by 1970, when Lon Nol overthrew the government of Prince Norodom Sihanouk, two wars were being waged in Cambodia: a Cambodian civil war between the Khmer Rouge and Lon Nol's government forces and a conflict between Pol Pot's army and Vietnamese troops in the eastern sector of Cambodia near the Ho Chi Minh Trail.[1] The communist victory in Cambodia ended only one of these wars, and allowed the Pol Pot leadership to focus its attention and forces on Cambodia's war with the powerful and menacing Vietnamese.

THE Cambodian-Vietnamese conflict that followed the Vietnam War can be traced back to earlier, deep divisions within the Khmer Rouge itself. The first Cambodian Communists were members of the Indochinese Communist Party and received training from their more senior Vietnamese colleagues. Later generations of Cambodian Communists, on the other hand, studied Marxism-Leninism in Paris and, unlike their predecessors, felt neither loyalty nor obligation to the Vietminh. Thus, after the 1954 Geneva Conference, when Hanoi ordered Cambodian Communists to withdraw to Vietnam and wait to fight another day, the Paris wing of the Cambodian Communists, which included Pol Pot, opted to remain behind and organize resistance to the Sihanouk government. The Paris wing henceforth considered their Cambodian colleagues in Vietnam as more loyal to Hanoi than to Cambodia. As Elizabeth Becker points out in *When the War Was Over*, Cambodian Communists in Vietnam were maligned as "Vietnamese in Khmer bodies" (p. 151).

The tension and competition between these two groups of Cambodian Communists reflected differences in their bases of power, their revolutionary strategies, and their international alignments. Thus, the basis for conflict already existed when the Cambodian Communists who had been living in Vietnam since 1954 returned home in the early 1970's. What resulted was intense factional conflict that ultimately led to armed clashes.[2]

Clearly, the endless purges in postwar Cambodia and the escalating Cambodian-Vietnamese conflict have grown out of trends apparent long before the fall of Saigon. Nevertheless, the history of the postwar era indicates that the war between Hanoi and Phnom Penh and Vietnam's ultimate and continued occupation of Cambodia were not the inevitable outcome of such historical conflicts. There was no inexorable trend toward war. In this respect, observers who expected stable relations among the Indochinese states and between Vietnam and the Southeast Asian states simply failed to predict the self-destructive policies of the Khmer Rouge.[3]

Hanoi obviously sought close and cooperative relations with Laos and Cambodia in the immediate postwar era, but it presumably also sought the realization of its historic objective of an Indochina federation, now rechristened as a "special relationship." However, it does appear that at least initially Hanoi was not willing to pay an exorbitant price to attain the latter objective. In the aftermath of the fall of Saigon, Vietnam preferred a peaceful international environment.

As Nayan Chanda rightly points out in *Brother Enemy: The War after the War*, much of Vietnam's policy toward Laos and Cambodia and its quest for a "special relationship" was predicated on its fear of the expansion of Chinese influence into Indochina. Chanda notes that the billion Chinese to the north appeared even more threatening when Hanoi considered that China could encircle Vietnam by means of alliances with Cambodia and/or Laos (pp. 94–96, 215). Thus, when such encirclement seemed to develop as Cambodia established a

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[1]For a discussion of Khmer Rouge policies after the 1970 Cambodian coup, see Kenneth M. Quinn, "Political Change in Wartime: The Khmer Krahom Revolution in Southern Cambodia, 1970–1974," *Naval War College Review* (Newport, RI), Spring 1976, p. 8.

[2]For discussion of the early years of Cambodian communism and the emergence of the Pol Pot wing, see Ben Kiernan, *How Pol Pot Came to Power*, London, Verso, 1985; and Timothy Carney, *Communist Party Power in Kampuchea (Cambodia): Documents and Discussion*, Ithaca, NY, Cornell University Southeast Asia Program, 1977.

[3]See, e.g., Michael Leifer, "The Security of Southeast Asia," *Pacific Community* (Tokyo), October 1975, pp. 626–36.

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strategic "tilt" toward China, Hanoi began to view its Cambodian neighbor with increasing alarm and moved to consolidate its relations with Moscow. Nevertheless, in explaining Vietnamese motivations, Chanda appears to underemphasize the threat Vietnamese policy posed for Phnom Penh. What was good for Vietnam was not necessarily good for Cambodia. As Becker argues, Pol Pot's hatred and belligerence toward Vietnam clearly reflected an obsessive and paranoid fear of Vietnamese expansionism, yet, even for saner and more moderate nationalist Cambodians, Vietnamese objectives in Indochina remained a thorny problem. The real source of the Vietnamese-Cambodian conflict was not Pol Pot's creation of an illusory Vietnamese enemy, but the inability of Cambodian and Vietnamese statesmen to resolve a real, yet possibly containable, conflict of interest.

From the day Phnom Penh fell to the Cambodian Communists, Khmer Rouge leaders made it clear that they would not allow Cambodia to be subject to Vietnamese leadership. Whereas Hanoi stressed the role of coordinated struggle in the Khmer Rouge victory and the need for the further consolidation of relations among the Indochinese states in the postwar period, Phnom Penh's polemics clearly identified Vietnam, not the United States, as the primary threat to Cambodian independence. Its border policies, military deployments, and negotiations with Vietnamese statesmen all revealed Phnom Penh's unshakeable desire for complete freedom from Vietnamese influence. As Saigon was falling to the Vietnamese Communists, Phnom Penh demanded that all Vietnamese forces withdraw immediately from Cambodian territory and declared that it would "resolutely" oppose "all foreign intervention in the internal affairs of Cambodia and vigorously oppose all foreign subversion and aggression against Cambodia."[4]

Such tensions and verbal jousting became the norm in Indochinese politics after 1975. Hanoi would try to cajole or pressure Phnom Penh into accommodating itself to Vietnamese objectives, while Cambodia resolutely refused to significantly soften its hostile posture toward Vietnam. Meanwhile, the Khmer Rouge wasted no time after the fall of Phnom Penh in signaling its willingness to align with Beijing to offset Vietnamese power in the region. Nevertheless, despite such belligerence and contentious diplomacy, the Vietnamese-Cambodian conflict was contained, and relations did not deteriorate uncontrollably into full-scale war. Border liaison committees were established in mid-1975, and for the next two years the two sides kept their frequent border skirmishes under control; at times, Cambodian polemics even eased up a bit.[5] The Khmer Rouge media even declared on occasion: "Long live the militant solidarity between Cambodia and Vietnam!"[6]

EXPLAINING this relatively peaceful interlude in Vietnamese-Cambodian relations is difficult. Becker argues that until 1977, Khmer Rouge leaders, including Pol Pot and his political allies, still identified the United States as the immediate threat to the Khmer Rouge revolution. They thus sought to moderate conflict with the relatively more "benign" Vietnam in order to concentrate on the US enemy (pp. 210, 280). This, however, requires the reader to believe in a more rational Khmer Rouge view of Vietnam than Becker's own description permits—a Khmer Rouge capable of prioritizing its adversaries. Although Becker minimizes the importance of Phnom Penh factionalism (p. 280), a more plausible explanation stresses shifts in Politburo alignments.[7] Beginning in the spring of 1976, coinciding with the period of stability in Cambodian-Vietnamese relations, factional politics resulted in increased representation for the "Hanoi wing" of the Khmer Rouge. Only when Pol Pot had succeeded in eliminating his factional adversaries did he and his colleagues have sufficient authority to conduct an independent policy toward Vietnam.

Thus in early 1977, as Pol Pot consolidated his political position in Phnom Penh, the situation in Indochina rapidly deteriorated: Cambodia began launching a series of increasingly violent forays into Vietnamese territory, while Vietnam responded with ever greater force, trying to impress upon Phnom Penh the potential cost of an escalating conflict. Once again, the Fishhook and Parrot's Beak regions became violent war zones, just as they had been during the era of US involvement. The turning point came after a major Vietnamese incursion into Cambodia in December 1977. Phnom Penh responded with a stream of vitriolic polemics and the acquisition of additional Chinese support.[8] The

[4]"Press Communiqué of Cambodia Special National Congress," *Peking Review*, May 2, 1975, pp. 19–20.

[5]Gareth Porter, "Vietnamese Policy and the Indochina Conflict," in David W. P. Elliott, Ed., *The Third Indochina Conflict*, Boulder, CO, Westview Press, 1981, p. 94; Hanoi Domestic Service, Jan. 4, 1978, in Foreign Broadcast Information Service, *Daily Report: Asia and Pacific* (Washington, DC—hereafter *FBIS-APA*), Jan. 4, 1978, p. K/19.

[6]Editorial, Phnom Penh Domestic Service, Aug. 21, 1975, in *FBIS-APA*, Aug. 22, 1975, p. H/2.

[7]Michael Vickery, *Cambodia: 1975–1982*, Boston, South End Press, 1984, pp. 146–48.

[8]In early 1978, Beijing provided Cambodia with significant amounts of ammunition, 150mm artillery, and anti-tank weapons. See, e.g., Evelyn Colbert, *Power Balance and Security in Indochina*, Marina del Rey, CA, Security Conference on Asia and the Pacific, 1983, p. 14; Marian Kirsch Leighton, "Perspectives on the Vietnamese-Cambodian Conflict," *Asian Survey* (Berkeley), May 1978, p. 451.

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Cambodians had not been deterred by Hanoi's show of strength and so Vietnam began preparations for an all-out struggle during the next dry season. A Vietnamese Politburo meeting in mid-February 1978 decided to set up a Cambodian exile army to overthrow the Pol Pot regime (Chanda, pp. 214–16). Border hostilities had thus escalated into the Vietnamese invasion of Cambodia.

THREE authors—Chanda, Becker, and Chang Pao-min in his *Kampuchea between China and Vietnam*—agree that the growing belligerence of the Khmer Rouge was primarily responsible for the deterioration of Vietnamese-Cambodian relations. Not only did Pol Pot's domestic policies inflict immeasurable long-term harm on the Cambodian people, but the impact of his foreign policy is still very much alive today in the Vietnamese occupation of Cambodia and the political polarization of Southeast Asia. However, neither Chang nor Chanda quite succeed in providing a satisfactory explanation for what may in fact be the inexplicable tragedy of Pol Pot. Chang suggests that pre-existing Cambodian xenophobia was fueled by fear of a Sino-Vietnamese compromise—an unlikely prospect (pp. 52–53). Chanda points to a number of factors, including growing Cambodian suspicion of the incessantly consolidating Vietnamese-Lao relationship, culminating in the July 1977 Vietnamese-Lao Treaty of Friendship and Cooperation;[9] Pol Pot's greater self-confidence after the elimination of all domestic opposition to his leadership; the Khmer Rouge's conclusion that a negotiated solution to the Vietnamese-Cambodian border conflict was unattainable; the need to make a "show of force" against Vietnam in order to remain independent; and the "hubris of victory" (pp. 84–86, 96–98).

The roots of the Khmer Rouge insanity are directly addressed by Becker. She minimizes William Shawcross's argument that relentless and massive US bombing had destroyed the Khmer Rouge's capacity for rational thinking.[10] Instead, she stresses that the early abandonment of the Cambodian Communists in Cambodia by Vietnam, China, and the rest of the communist world—who favored the friendship of the accommodating Prince Sihanouk—compelled Pol Pot, Ieng Sary, and their Khmer Rouge colleagues to rely on their own resources and to distrust all outsiders. In the complete isolation of rural Cambodia, under conditions of guerrilla warfare, such mistrust intensified to the point where the party leadership felt secure only in isolation. Such paranoia, Becker argues, combined with a natural propensity for violence in Khmer culture, produced the incalculable loss of life in Cambodia (pp. 82–85). Finally, she adds, as life in Cambodia steadily deteriorated, Phnom Penh needed an external enemy to blame for the results of its own failed policies. Vietnam, Cambodia's traditional enemy, was the natural choice. Thus, the Khmer Rouge instigated a border war which it ultimately could not control (pp. 300–302).

As difficult as it is to accept the Shawcross argument that the United States is to blame for all the horrors of the Pol Pot regime, Becker's analysis is not much more satisfactory. Although all of the characteristics of the Khmer Rouge she describes—the isolation, the sense of abandonment, the cultural potential for violence, and the need for an external enemy—undoubtedly contributed to the nightmare, these traits have characterized other elites as well. Indeed, the Chinese Communist Party had a very similar revolutionary history, but without the same extreme consequences. For the time being at least, the incredible destruction wrought by the Khmer Rouge remains a troubling mystery.

WHATEVER explanation one offers for Pol Pot's domestic and foreign policies, even if one assumes that Cambodia had a stake in resisting Vietnamese power in Indochina, it is clear that the aggressive behavior exhibited by the Khmer Rouge in border clashes served to undermine Cambodia's basic interests. Vietnam, in the end, responded by invading and occupying Cambodia. An alternative option for Cambodia would have been to resist Vietnamese pressure and enhance its relations with China while seeking to avoid armed conflict with the Vietnamese. Although Vietnam would undoubtedly still have been disturbed by its inability to establish a "special relationship" with Cambodia, the prospect of a peaceful, if resolutely independent, neighbor might have deterred Hanoi from seeking to attain its goal by force. Indeed, Vietnam had experienced such a relationship for the two years following unification. The cost-benefit ratio for Hanoi changed dramatically, however, when Cambodia adopted a significantly more unfriendly border policy.

At the same time, it would be a mistake to impute any benevolent motives to the Vietnamese leadership. Indeed, William Duiker, in *Vietnam Since the Fall of Saigon*, argues that, in addition to the importance of Khmer Rouge provocations and

[9]Vietnamese influence in the Lao communist movement long preceded the official communist takeover in Laos in December 1975. The most comprehensive analysis of Vietnamese relations with the Lao communist movement is MacAlistair Brown and Joseph J. Zasloff, *Apprentice Revolutionaries: The Communist Movement in Laos, 1930–1985*, Stanford, CA, Hoover Institution Press, 1986.

[10]William Shawcross, *Sideshow: Kissinger, Nixon, and the Destruction of Cambodia*, New York, Simon and Schuster, 1979.

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Vietnamese defensive strategic and rational national interest calculations, Vietnamese historical ambitions for control over Indochina played a vital role in Hanoi's policy toward Cambodia (pp. 113, 122–23). Hanoi's invasion of Cambodia not only was an act clearly disproportionate to the scale of earlier Khmer Rouge provocations, it also was unnecessary for the defense of Vietnamese territory.

Whether in the context of an Indochina federation or of a "special relationship," Vietnam's leaders plainly sought a compliant Cambodia that would be willing to coordinate its policies with Hanoi's. For the Vietnamese, Duiker observes, the "issue was not subject to negotiation." Thus, Hanoi's growing "exasperation" with the obstreperous Pol Pot government became an increasingly significant factor in Vietnam's calculations (p. 113). Becker suggests that the Khmer Rouge's border provocations provided Vietnam with a "historic opportunity" to achieve its traditional objective of domination over all of Indochina (pp. 336–37). When "exasperation," national interest, and an opportunity to control its neighbor coincided, Vietnam prepared for war.

China's Dilemma

FOR Chinese leaders, the unification of Vietnam and the conflict between Cambodian and Vietnamese Communists posed a difficult dilemma that they ultimately failed to resolve: how could China deter Vietnam from dominating all of Indochina and, simultaneously, minimize Hanoi's incentive to side with Moscow in the Sino-Soviet dispute, thereby enhancing the potential for a more complete Soviet encirclement of China. A Vietnamese-Cambodian war was hardly in China's interest. Yet, a war did take place and Hanoi, with the support of Moscow, achieved military domination over both Laos and Cambodia.

What did China do to avert the war in Indochina? Could it have served its own interests and still promoted peace? To answer these questions we have to reexamine Sino-Vietnamese relations.

It is tempting to view Beijing's Vietnam policy as a simple continuation of the Middle Kingdom's view of its neighbor as a tributary state. Clearly, some of the strains in the relationship between the two countries can be traced back to China's traditional resistance to Vietnamese yearnings for independence.[11] Yet, it is important to recognize that dynastic China was as concerned with security as is the People's Republic of China (PRC), and that Chinese emperors sought a docile Vietnam in part to secure peace along a traditionally turbulent frontier. China has a long history of realpolitik, and the tributary system was no exception to this pattern.[12]

In the last four decades, first the United States and then the Soviet Union have established positions in Vietnam that appeared to threaten China's southern flank. Since the 1960's, China had been competing with Moscow for Vietnamese friendship and had opposed Vietnamese policies that could result in greater Soviet influence in Hanoi, fearing that after unifying Vietnam, Hanoi might abandon its relatively neutral position in the conflict between the Soviet Union and China.[13] After 1975, that fear became reality.

Unlike Hemen Ray, whose largely anti-Chinese polemic, *China's Vietnam War,* argues that Chinese policy was motivated solely by its ambition to exercise hegemony in the region (p. x.), Chanda and Chang recognize that the PRC's ultimate objective was to forestall a Soviet encirclement of China. This was the period when China was greatly apprehensive about the consequences of US "appeasement" and the resultant Soviet expansion into Asia, and Beijing's Vietnam policy was a clear reflection of these fears.[14] Ultimately the Chinese leaders' preoccupation with the Soviet threat in Indochina led to their invasion of Vietnam in 1979. As Deng Xiaoping told National Security Advisor Zbigniew Brzezinski during his visit to Washington just prior to the attack, China had to disrupt Soviet strategic calculations, and if Hanoi were not punished, Moscow might use Vietnam much as it had Cuba.[15]

[11]For discussion of an earlier and no more successful Chinese military "lesson" to Vietnam, see "Intervention versus Tribute in Sino-Vietnamese Relations, 1778–1790," in John K. Fairbank, Ed., *The Chinese World Order,* Cambridge, Harvard University Press, 1968. For the view of Vietnamese history defined as resistance to Chinese expansionism, see Joseph Buttinger, *The Smaller Dragon: A Political History of Vietnam,* New York, Praeger, 1958, p. 100.

[12]For a discussion of dynastic China's relations with Southeast Asia stressing national security considerations, see Jane Kate Leonard, *Wei Yuan and China's Rediscovery of the Maritime World,* Cambridge, Harvard University Press, 1984. For a discussion of the realist tradition in Chinese political culture, see Michael Hunt, "Chinese Foreign Relations in Historical Perspective," in Harry Harding, Ed., *China's Foreign Relations in the 1980s,* New Haven, Yale University Press, 1984; and Peter Moody, "The Romance of the Three Kingdoms and Popular Chinese Political Thought," *The Review of Politics* (Notre Dame, IN), April 1975, pp. 175–99.

[13]See, e.g., Donald S. Zagoria, *The Vietnam Triangle: Moscow, Peking, Hanoi,* New York, Pegasus, 1967; David Mozingo and Thomas Robinson, *Lin Piao on "People's War": China Takes Another Look at Vietnam,* Santa Monica, CA, Rand Corporation, No. RM 4814-PR, 1965. For a comprehensive discussion of the issues dividing the states through the fall of Saigon, see Eugene Lawson, *The Sino-Vietnamese Conflict,* New York, Praeger, 1984.

[14]Ross, "International Bargaining and Domestic Politics: US-China Relations since 1971," *World Politics* (Princeton), January 1986; and idem, *The Indochina Tangle: China's Vietnam Policy, 1975–1979,* New York, Columbia University Press, forthcoming.

[15]Zbigniew Brzezinski, *Power and Principle: Memoirs of the National Security Advisor, 1977–1981,* New York, Farrar Strauss Giroux, 1983, pp. 409–10

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A HOST of other issues plagued relations between Hanoi and Beijing, including disputes over territory, economic frictions, the treatment of the ethnic Chinese in Vietnam, and the role of Cambodia in Indochina. Whereas Chanda argues that the Vietnamese "were ready to bend over backward to please Pol Pot," (p. 85) he fails to see that from 1975 to early 1978 PRC strategic concerns prompted Chinese leaders to acknowledge Vietnam's interests in Indochina. While attempting to consolidate its strategic position in Phnom Penh, until early 1978 China also sought to reduce Hanoi's incentive to seek a security relationship with the Soviet Union, and thus minimize the Soviet presence in Indochina, by negotiating, shelving, or ignoring the various Sino-Vietnamese conflicts of interests. As a result, Chinese leaders adopted a two-pronged approach when first faced with the problem of Vietnamese-Cambodian conflict. On the one hand, they adhered to their nonnegotiable stand on an independent Cambodia, made clear by the PRC's February 1976 commitment to provide Cambodia free of charge military equipment valued at 226,000 yuan.[16] Beijing clearly feared that once Hanoi established predominant influence in Phnom Penh, it might later improve relations with Moscow at China's expense. Only an independent Cambodia could forestall such a development.

On the other hand, Beijing initially tried to avoid taking sides in the Vietnamese-Cambodian conflict and to moderate Phnom Penh's belligerent Vietnam policy. In the early period, China appeared to encourage Indochinese "unity," observing that Vietnam's victory was the "common victory of the Indochinese peoples in their united struggle,"[17] a phrase remarkably similar to Vietnam's own justification for a "special relationship." Deng Xiaoping pointed out that the Lao, Cambodian, and Vietnamese victories were "victories for the united struggle of the three Indochinese peoples."[18] In late 1977, as the Vietnamese-Cambodian border conflict escalated, he said, "what we want is for them to carry out good negotiations . . . . We do not judge what is just or erroneous."[19] In February, making China's last such moderating gesture, he suggested that the conflict be resolved through consultations based on the five principles of peaceful coexistence.[20]

As Chanda notes, it was a case of the "tail wagging the dog" (pp. 210–12) as Cambodian obstinacy increasingly forced Chinese leaders to choose between reducing aid to Cambodia, thereby possibly undermining China's strategic position in Indochina, or conceding an inability to moderate the Vietnamese-Cambodian conflict while maintaining opposition to a Vietnamese military solution to Cambodian belligerency. Beijing chose the latter, while still hoping somehow to avert a breach in its relations with Vietnam.

Nonetheless, although China had been prepared to accept an influential Vietnamese role in Indochina provided that Cambodia remained independent, its clear precondition was that Vietnam maintain strategic distance from the Soviets. The unspoken corollary was that Beijing would have the most influential voice in the region, for if the Soviet role were minimized, Chinese influence would naturally fill the vacuum.

Beijing unceasingly bombarded Hanoi with anti-hegemonist warnings, while stressing the importance of close relations between China and Indochina. In the aftermath of the fall of Saigon, Zhou Enlai and Zhu De had recognized that "Indochina belongs to the Indochinese peoples," but added that China and the three Indochinese countries were "linked by mountains and rivers and as closely related as lips and teeth." Likewise, while Ye Jianying declared that the Vietnamese and Cambodian victories were the "heaviest blows dealt at . . . hegemonism," he was careful to add that "no force can sabotage" Sino-Vietnamese friendship.[21] Beijing's tacit deal was remarkably similar to the one Hanoi alleges Deng offered in 1963—to grant Vietnam one million yuan in economic assistance if Hanoi rejected all Soviet aid.[22] However, as Hanoi moved closer to Moscow after the fall of Saigon, Beijing was less willing to concede any Vietnamese influence in Phnom Penh.

The turning point in Sino-Vietnamese relations came when the Vietnamese leadership, despite secret Chinese warnings, unified the currencies of northern and southern Vietnam, placed limits on cash holdings (thus destroying personal savings), and then nationalized the southern economy overnight in an obvious effort to crush the economic autonomy of its Chinese population.

[16]Fong Weizhong, Ed., *Zhonghua Renmin Gongheguo Jingji Dashiji* (Economic Chronicle of the People's Republic of China), Beijing, Chinese Social Science Press, 1984, p. 559. Given our lack of knowledge of the internal pricing of military equipment, the figures are best left in yuan.

[17]Editorial, "A Great Victory of World Significance," *Renmin Ribao* (Beijing), May 1, 1985, in Foreign Broadcast Information Service, *Daily Report: China* (Washington, DC—hereafter *FBIS-CHI*), May 1, 1975, p. A/4.

[18]Xinhua, Sept. 22, 1975, in *FBIS-CHI*, Sept. 23, 1975, p. A/15.

[19]Agence France Presse, Oct. 21, 1977, reported in *FBIS-CHI*, Oct. 25, 1977, p. A/1.

[20]Beijing Radio, in Burmese, to Burma, Jan. 21, 1978, in *FBIS-CHI*, Jan. 30, 1978, pp. A/7–8.

[21]See, respectively, Xinhua, Apr. 24, 1975, in *FBIS-CHI*, Apr. 24, 1975, p. A/17; "A Great Victory of World Significance," loc. cit., p. A/4; Beijing Domestic Service, May 2, 1975, in *FBIS-CHI*, May 2, 1975, p. A/3.

[22]*The Truth About Sino-Vietnamese Relations over the Past Thirty Years*, Hanoi, Ministry of Foreign Affairs, Socialist Republic of Vietnam, 1979, p. 33. Duiker reports this as fact (p. 93), citing p. 20 of a different version of this Hanoi publication.

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The result was severe hardship for the ethnic Chinese in southern Vietnam. At the same time, over 170,000 Chinese fled northern Vietnam for China with no discouragement from the Vietnamese authorities. The latter had evidently decided that the ethnic Chinese population was a potential "fifth column" working for the PRC and posed too great a threat to internal security.

Chanda, citing interviews with Vietnamese leaders, argues that Hanoi had not expected such a strong Chinese reaction (p. 241). It is more likely, however, given China's earlier secret warnings about "discrimination" against "Chinese citizens" and its harsh response to Indonesia's treatment of its ethnic Chinese population in 1965,[23] that Vietnam had simply decided, in light of the recent consolidation of Sino-Cambodian relations and Pol Pot's unwavering belligerence, that a military solution to the Vietnamese-Cambodian conflict was necessary. Since a Vietnamese attack on Cambodia would clearly entail hostile relations with China, Hanoi stood to lose very little in eliminating the autonomy of its feared ethnic Chinese "fifth column."

China responded by cutting off aid to Vietnam and bringing the dispute to the brink of armed conflict.[24] But whereas Duiker argues that China's harsh reaction to the overseas Chinese issue was simply a pretext for expressing opposition to Hanoi's Cambodia policy (pp. 132–33), Chang stresses the coincidence of Vietnam's disregard for Chinese warnings regarding the overseas Chinese and Hanoi's pronounced recent tilt toward Moscow as suggestive of a willingness to alienate Beijing. According to Chang, Hanoi's ethnic Chinese policy convinced Chinese leaders that Vietnam had decided to align itself with the Soviet Union (pp. 60–61). Chanda supplements Chang's explanation, stressing Beijing's anger at Vietnam's challenge to the PRC's overseas Chinese policy and pretensions to regional power (p. 242).

To this must be added China's growing frustration over the perceived audacity of its erstwhile tributary. Since 1975, PRC interests had encouraged Beijing to avoid alienating Vietnamese leaders, while it repeatedly voiced concern for the welfare of the ethnic Chinese in Vietnam and opposition to improved Soviet-Vietnamese relations. Chinese leaders interpreted Hanoi's policy as abuse of their good will and blatant defiance by an arrogant and weak neighbor. Hanoi had thus not only undermined Chinese interests, but had done so in a way that was simply too abrasive for Chinese leaders to accept gracefully. Much as frustration over Cambodian obstinence had shaped Hanoi's policy, exasperation with Vietnam's cavalier disregard of numerous warnings contributed to the severity of Chinese policy.

ULTIMATELY, China's effort to negotiate the hazards of Indochinese politics floundered on the escalating Vietnamese-Cambodian conflict and the intractability of Pol Pot. Without redefining its interests and abandoning its objective of an independent Cambodia and minimal Soviet influence in Indochina, could China have done more to avoid its conflict with Vietnam and avert a new round of warfare in Indochina?

There was in fact probably little Chinese leaders could have done to alter Cambodian foreign policy. They had tried without success to promote former Prince Norodom Sihanouk as a moderating influence in Phnom Penh, and they could not have altered Khmer Rouge border policy without weakening Cambodia's ability militarily to maintain its independence in the face of Vietnamese pressure. The only other factor open to Chinese manipulation was Soviet-Vietnamese relations, and here, too, the PRC found itself unable to alter the sequence of events in the interests of its own security or regional peace.

From the first days after the fall of Saigon, China had called on Vietnam to minimize its collaboration with the Soviet Union. As the *Renmin Ribao* editorial celebrating the fall of Saigon had reminded its readers, the "superpower that carries the signboard of socialism . . . burns with ambition and engages in frantic expansion."[25] When Le Duan visited Beijing in September 1975, Vice Premier Deng reminded him that "to combat superpower hegemonism is a vital task facing the peoples of all countries."[26] Not even Cambodia's provocative Vietnam policy—which probably contributed to Vietnam's interest in Soviet support—could persuade China to compromise on this demand.

Thus, China's decision to invade Vietnam reflected the failure of its policy of the previous four years and its apprehension about the extension of Soviet-Vietnamese coopera-

[23]The secret warnings are reported in Vietnam News Agency, June 17, 1978, in *FBIS-APA*, June 19, 1978, p. K/14. For a discussion of relations between China and Indonesia, see David Mozingo, *Chinese Policy toward Indonesia, 1949–1969*, Ithaca, NY, Cornell University Press, 1976.

[24]Chanda, citing interviews with Chinese officials, argues that in May 1978 the Chinese Politburo had already decided to "teach Vietnam a lesson" for Vietnam's maltreatment of its ethnic Chinese population, implying that China's invasion of Vietnam would have occurred regardless of developments in Cambodia. My own research and interviews indicate that although Beijing may have aimed to pressure Hanoi with the threat of war, the Chinese leadership considered going to war because of the maltreatment of overseas Chinese inappropriate and actually resigned itself to Vietnam's ethnic Chinese policy, shifting its attention to Vietnam's Cambodia policy, which ultimately elicited the Chinese invasion. See Ross, *The Indochina Tangle*.

[25]"A Great Victory of World Significance," loc. cit., p. A/3.

[26]Xinhua, Sept. 22, 1975, in *FBIS-CHI*, Sept. 23, 1975, pp. A/14–16.

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tion into Cambodia. The foreign policy role of the attack is clear—it signaled Moscow about the dangers of its China policy, deterred Vietnam from taking the war into Thailand, bolstered China's credibility as an obstacle to Soviet-Vietnamese cooperation in Asia, and undermined Hanoi's ability to concentrate its military resources on annihilating the armed forces of the Khmer Rouge. At the same time, the attack reflected a Chinese thirst for revenge. Beijing's reaction to the overseas Chinese crisis already reflected Chinese exasperation with Vietnamese "insolence." Yet, Hanoi refused to heed the warning, going on to occupy Cambodia. The PRC's response thus reflected not only foreign policy considerations, but also the desire to "punish" the Vietnamese for their impudence. Li Xiannian insisted that Vietnam's invasion of Cambodia had been "backed by the Soviet hegemonists" and that "the Chinese people are very indignant at this." He added: "We have time and again warned the Vietnamese not to turn a deaf ear to what we have said." *Renmin Ribao* charged that Hanoi had responded to Chinese "patience and restraint" with duplicity and treachery. "They are arrogant in the extreme."[27]

Superpower Involvement

MUCH of the existing Western analysis of Soviet involvement in Indochinese politics focuses on Moscow's response to the Vietnamese invasion of Cambodia and to Beijing's subsequent attack on Vietnam. The Soviet Union is seen as behaving responsibly, abstaining from direct military involvement in Vietnam's wars with Cambodia and China.[28] Relatively little attention, however, has been paid to Soviet-Vietnamese relations prior to the deterioration of the situation in Indochina, particularly to Soviet policy leading up to Vietnam's occupation of Cambodia. It is in fact clear that Moscow did everything possible to pressure Vietnam into committing itself to Soviet foreign policy, and that the USSR encouraged Hanoi to do whatever needed to consolidate Vietnam's "special relationships" in Indochina, including using force against Cambodia.

The Soviet Union pursued two complementary objectives—encircling China and improving its own strategic position vis-à-vis the United States in Southeast Asia. An alliance with Vietnam would provide just such a strategic position in the region, yielding an ally on China's border and access to the naval base at Cam Ranh Bay in the South China Sea.[29] Not only did the Soviet Union liberally supply Hanoi with military equipment, but, as Chanda's very revealing interviews with Vietnamese and Soviet statesmen make clear, Moscow relished the idea of a Soviet-Vietnamese treaty, despite its obvious potential for contributing to the outbreak of war in Indochina. Indeed, the treaty would have come much sooner than November 1978, one month before the Vietnamese invasion of Cambodia, except for the fact that Hanoi was waiting for the most opportune moment, having for some time been reluctant either to surrender its independence or alienate both China and the advanced capitalist countries, including the United States.

Why, then, was Vietnam unable to maintain the independence it had struggled so tenaciously for nearly 30 years to achieve, becoming instead a committed member of the Soviet bloc? Clearly, security reasons promoted close Soviet-Vietnamese relations. Only through friendship with the Soviet Union could Hanoi offset Chinese power and the potential for an anti-Vietnamese Sino-Cambodian alliance. But were there not other options for Hanoi than simply strategic alignment with the Soviet Union? Chanda seems to think so, arguing that the policies of other actors, particularly the United States and China, failed to respond adequately to Hanoi's efforts to develop a more varied set of diplomatic relations. When all other avenues were closed, Hanoi had little choice but to opt for close, more dependent relations with Moscow.

Chanda argues that the Americans were primarily to blame for the inability of the United States and Vietnam to normalize relations. The Carter administration sent confusing signals, encouraging Vietnamese leaders to think that the United States would provide Vietnam with economic assistance, and then, once Hanoi had prepared itself to compromise, backing down because of the continued hostility of the American public and the weakness of the President. As a result, in mid-1977, when Hanoi was faced with limited Soviet aid, a poor economy, and a growing menace from Cambodia, US policy and the reluctance of Japan and Western Europe to grant significant economic assistance persuaded Vietnamese leaders to give in to Moscow's pressure to align themselves more closely with the Soviet Union in exchange

[27]See, respectively, Xinhua, Feb. 11, 1979, in *FBIS-CHI*, Feb. 12, 1979, p. A/7; editorial, "Our Forbearance Is Limited," *Renmin Ribao*, Dec. 25, 1978, in *FBIS-CHI*, Dec. 26, 1978, pp. A/13–15.

[28]See, e.g., Stephen S. Kaplan, *Diplomacy of Power: Soviet Armed Forces as a Political Instrument*, Washington, DC, Brookings Institution, 1981, pp. 106–08; Raymond L. Garthoff, *Detente and Confrontation: American-Soviet Relations from Nixon to Reagan*, Washington, DC, The Brookings Institution, 1985, p. 716.

[29]For a discussion of Soviet objectives in Southeast Asia, see Richard H. Solomon, "Coalition Building or Condominium: The Soviet Presence in Asia and American Policy Alternatives," in Donald S. Zagoria, Ed., *Soviet Policy in East Asia*, New Haven, Yale University Press, 1982,

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for economic assistance. So began Hanoi's slide into the Soviet camp. In 1978, concludes Chanda, Hanoi finally dropped all preconditions to normalization, but the Carter administration, under the sway of the "Manichean anti-Sovietism" of Zbigniew Brzezinski, once again spurned a good-faith Vietnamese offer, choosing to placate Chinese interests so as to ensure a successful conclusion to US-China normalization negotiations (pp. 148–50, 158–60, 285–90, 408).

Washington certainly might have had a role to play in Vietnamese foreign policy, yet Chanda exaggerates US potential for postwar involvement in Southeast Asian politics and underestimates Vietnam's own role in preventing normalization of relations. It is hard to imagine the United States exerting critical influence in Indochina so soon after its defeat there and just shortly after Bangkok had forced the closing of American military bases in Thailand.

Moreover, Hanoi's own "hubris" led Vietnamese leaders to believe they could expect the United States to accept their terms for normalization. Indeed, Becker stresses, it is one of the tragedies of post-1975 Vietnam that had Hanoi normalized relations with the Carter administration in 1976 or 1977 without preconditions, trade and aid might well have followed and Vietnamese policy options thus been expanded dramatically (pp. 389–93).[30] As Chanda rightly notes, rather than turn to Moscow, Hanoi in 1977 could have simply "swallowed its desire to establish ties with the defeated enemy on its own terms," dropping its demand that US economic assistance be a precondition for the normalization of relations (p. 149). That it did not adopt such a course at that time was a major policy error.

Moreover, while it is clear that Washington would not have risked normalizing its relations with China by first establishing relations with Vietnam—a sensible policy given their respective Soviet policies, it is also true that various aspects of Vietnamese policy, particularly the exodus of the "boat people" and the development of closer Soviet-Vietnamese relations that culminated in the November 3 Treaty of Friendship and Cooperation, also obstructed improved US-Vietnamese relations. Yet, if the United States and Vietnam had normalized relations in late 1978, such normalization would likely only have served to further encourage Vietnam to occupy Cambodia. It would have reduced Vietnamese isolation and undermined the even limited value of developing US-China cooperation as a deterrent to Vietnamese use of force—especially insofar as US-China cooperation would have undoubtedly been delayed.

ULTIMATELY, even without the economic assistance of the advanced capitalist countries, Hanoi could have rejected Soviet aid. Its enthusiasm for Soviet assistance reflected not only its sense of insecurity in Indochina, but also its eagerness to modernize its war-torn society. By contrast, for most of the period since 1954, North Korea has foregone generous Soviet economic and military assistance as the price of maintaining neutrality in the Sino-Soviet dispute.[31] In 1977, Vietnamese leaders had similar options, but they chose to place preconditions on normalization of relations with the United States and to pay the steep price Moscow was asking for Soviet economic assistance—a greater Vietnamese commitment to the Soviet Union in international politics.

The Vietnamese leaders' desire for rapid reconstruction really left only the Soviet Union or the United States as parties capable of providing the necessary technology and money. Even if China had been more forthcoming in its aid program, in 1976 and early 1977, it could not have provided Vietnam with an alternative to Soviet economic assistance. Indeed, Vietnamese efforts to play its two erstwhile communist allies off against one another angered Beijing, because it knew it could only lose such a competition.

In 1978, when Vietnam greatly increased its alignment with the USSR, security considerations clearly outweighed economic factors. Pol Pot's increasingly aggressive stance on border questions had become ever more costly to Hanoi in terms of casualties, economic dislocations, and the burden of Cambodian refugees on southern Vietnam. Moreover, having decided that Pol Pot was unappeasable and that Beijing's military alignment with Cambodia (following its failure to moderate Pol Pot's Vietnam policy in early 1978) posed an intolerable challenge to Vietnamese security, Hanoi could conclude that the cost of the military imposition of a "special relationship" on Cambodia had become less than that of maintaining the status quo. In these circumstances, Vietnamese leaders moved with deliberateness to deal with their suspect ethnic Chinese population, join CEMA, and enhance visibly military cooperation with the USSR, ultimately leading to their signing of the critical Treaty of Friendship in November 1978.

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[30]Interviews I had with various US officials indicated that the Carter administration was willing to seek ways to assist the Vietnamese economy once normalization had taken place.

[31]For a discussion of North Korea's maneuvering between China and the Soviet Union, see Thomas P. Bernstein and Andrew J. Nathan, "The Soviet Union, China, and Korea," in Gerald L. Curtis and Sung-joo Han, Eds., *The US-South Korean Alliance: Evolving Patterns in Security Relations*, Lexington, MA, Lexington Press, 1983. For brief discussion of Soviet and Chinese aid to North Korea, see John Copper, *China's Foreign Aid*, Lexington, MA, Lexington Books, 1976, pp. 24–27.

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ONCE AGAIN, Pol Pot had played the crucial role in upsetting the delicate balance between war and peace in Indochina. Yet, as the reviewed works also make clear, Moscow itself had played a vital role in the course of events. Not only did it make Vietnam pay the price of closer alignment in return for economic assistance in 1977, but its readiness to outfit the Vietnamese army with sufficient equipment and its eagerness to sign the friendship treaty just as the dry season began in Indochina were significant factors in Hanoi's resort to war. The advantages of continued peace and forbearance would otherwise have seemed even greater.

While the Soviet Union played a major role in Vietnamese policy, the United States influenced Chinese strategy. Chanda clearly indicates that as Beijing's relationship with Vietnam deteriorated in 1978, Chinese leaders used the developing US-China relationship to bolster their position vis-à-vis the emerging Soviet-Vietnamese alliance (pp. 330–31). This culminated in the normalization of US-Chinese relations and Deng Xiaoping's masterly display of public relations during his January visit to the United States.

The normalization of US-Chinese relations and Washington's concomitant reluctance to normalize relations with Vietnam in late 1978 reduced the PRC's isolation and offset the Soviet-Vietnamese alliance, thus allowing China to feel more secure in "teaching Vietnam a lesson." By all indications, Chinese leaders had already laid plans to attack Vietnam prior to Deng's arrival in the United States. The Carter administration's warm welcome for the Chinese leader and its very mild admonishments concerning Beijing's expected punitive invasion further reinforced Beijing's inclination to retaliate against Vietnam for its occupation of Cambodia.

Conclusion

ALL of Southeast Asia and particularly the Cambodian people continue to suffer from the conflict in Indochina as Pol Pot and other erstwhile Cambodian leaders struggle against the Vietnamese occupation forces. The entire region remains polarized around the issue of Vietnam's continued occupation of Cambodia.

Chanda, Chang, and Duiker analyze the situation in Indochina focusing on events from China's February 1979 punitive invasion of Vietnam to the present, discussing both internal Cambodian issues and the diplomacy between China and the ASEAN states on the one hand, and Vietnam on the other. Duiker and Chang suggest that the main obstacle to a solution is Vietnam's insistence on domination in Indochina, while Chanda stresses Beijing's unwillingness to abandon Pol Pot and the Khmer Rouge. There is undoubtedly truth in both explanations. On one point the authors do agree: that Vietnam, having established near complete de facto dominance over Cambodia and the various resistance armies, is in no hurry to withdraw its forces.

None of the books under review here offers sustained and consistent arguments to explain either the motivations and diplomatic behavior of the protagonists or the way in which their interactions led to a new Indochina war, even though during this period the signaling among China, the Soviet Union, Vietnam, and Cambodia was particularly rich and informative of their respective intentions and postures. Nevertheless, as narrative histories offering eclectic explanations of the major events leading up to the war, they take us a long way toward understanding the continuing tragedy of Indochina.

The War after the War, while focusing primarily on the Vietnamese situation, uses extensive and fascinating interviews with officials from all the sides to offer the most readable and comprehensive look at foreign relations in Indochina. Nevertheless, unlike Duiker and Becker, Chanda never adequately considers Vietnam's strong commitment to achieving a historically significant "Indochina Federation" when discussing Hanoi's decision to occupy Cambodia. His argument that Vietnam would have "bent over backward to please Pol Pot" (p. 85) contrasts with the view in Duiker's *Vietnam Since the Fall of Saigon* that there were clear limits to Vietnamese good will (p. 113).

When the War Was Over, by Becker, offers a full description of the horrors of Pol Pot's Cambodia and provides the best available discussion to date of Khmer Rouge policy in general. Despite a paucity of citations and various factual errors that limit the value of this work to both students and scholars, the book goes far toward helping us understand the horrors of Cambodia under the Khmer Rouge.

By focusing primarily on Chinese and Vietnamese diplomacy over Cambodia, Chang Pao-min cannot begin to adequately explain the ultimate fate of the Khmer Rouge, since it was intimately bound up in the bilateral Sino-Vietnamese conflict over the territorial issues, the overseas Chinese, and the Sino-Soviet competition in Vietnam. His *Kampuchea between China and Vietnam* is therefore more suited as a text for an undergraduate course on international relations in Asia. The reader searching for a more detailed discussion of these issues would be wise to turn to Chang's many articles on the topic. Duiker's book, while an excellent analysis of both Vietnamese domestic and foreign policy since 1975 and a work well suited for student use as an introductory text to postwar Vietnam, has a section on foreign policy that is regrettably too

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brief to fully explain the nuances of the complex Indochina setting.

As these books reveal, the policies leading to the third Indochina war were rarely simple. In the latest round of Indochinese wars, the tragedy is that the two major protagonists, Vietnam and China, initially preferred to avoid war. However, as occurs often in international politics, events outside the control of the major protagonists can override rationality and precipitate hostilities.

It may appear simplistic and too convenient to explain war as primarily the outcome of the behavior of a few pernicious leaders, but in Indochina Pol Pot and his fellow Khmer Rouge leaders clearly served as a catalyst precipitating the warfare. Cambodia's quest for independence was admirable, but its means were clearly abhorrent. Although Vietnam initially sought foreign policy independence from the Soviet Union and was initially prepared to accept less than a "special relationship" with Phnom Penh, and although China was at first prepared to tolerate some Soviet presence in Vietnam and promoted friendly Vietnamese-Cambodian relations, both states were unable to persuade Phnom Penh of the virtues of peaceful competition. Clearly, the United States and the Soviet Union neither created the conflict nor precipitated the war. Nonetheless, the superpowers, particularly the Soviet Union, encouraged the Sino-Vietnamese trend toward combat by favoring those options that promoted hostilities. After Saigon fell, China and Vietnam had various policy options. Ultimately, however, their choices steadily narrowed as the Pol Pot leadership became increasingly locked into behavior destructive not only to Cambodian interests, but to Chinese and Vietnamese interests as well.

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Vietnam War Reviewed

Allan E. Goodman

WILLIAM S. TURLEY. *The Second Indochina War*. Boulder, CO, Westview, 1986.

R. B. SMITH. *An International History of the Vietnam War: Revolution Versus Containment 1956–61*. New York, St. Martin's Press, 1983.

R. B. SMITH. *An International History of the Vietnam War: The Kennedy Strategy*. New York, St. Martin's Press, 1985.

GEORGE McT. KAHIN. *Intervention: How America Became Involved in Vietnam*. New York, Alfred A. Knopf, 1986.

GABRIEL KOLKO. *Anatomy of a War*. Toronto, Pantheon Books, 1985.

TRUONG NHU TANG. *A Vietcong Memoir*. New York, Harcourt Brace Jovanovich, 1985.

THE MOST striking thing about the six books under review here is that not one of them is written by a newcomer to the study of Vietnam. Indeed, the effort to put the United States's involvement in its longest, most controversial, and least successful war into perspective is today largely being carried out by the same handful of professors who were concentrating on the subject a decade ago. Sadly, there appears to be no new generation of Vietnam scholars either engaged in examining the issues differently or intent upon raising new questions about conventional wisdom. Between 1975 and 1984, for example, there were well over 10,000 Ph.D. dissertations written in the United States in the fields of history and of law and political science; yet, only 14 and 51, respectively, dealt with Vietnam. Of this number, just two have been published.[1]

Why is research and publication by new scholars important? A close look at the six books under review suggests part of the answer. While most are comprehensive, scholarly studies, they cover what is, for me at least, very familiar ground. Little new territory is explored, and few new explanations advanced. More important, they are all flawed by hindsight: each depicts the United States's entry into the war and the effects of the military and diplomatic strategies pursued by the US and the South Vietnamese governments in tones that make the outcome appear inevitable.

What is needed is fresh perspective and scholarly detachment. I accept as a fact of life that researchers rarely are able to remain entirely objective about their topics. But even if new scholars are trained by mentors who have well-developed theories about the subject being investigated, they may challenge old assumptions and question current interpretations, in the process offering new explanations and positing new theories.

[1]Data compiled for the years 1975 to 1985 from the annual editions of *Dissertation Abstracts International*, Ann Arbor, MI, University Microfilms, Inc., and *Cumulative Book Index*, New York, H. W. Wilson Company. Such scholarly inattentiveness to the study of Vietnam probably reflects both a desire to forget a national nightmare and the lack of fellowship and research resources that would allow today's dissertation writer to delve thoroughly into numerous and extensive archives, interview literally hundreds of decision-makers, and travel to Indochina for field research.

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Interestingly, some of the earlier reportorial works such as *Quicksand War, The New Face of War, The Best and the Brightest,* and *Fire in the Lake* do a better job than this new crop of books at conveying the analytical fog, media hype, and misconceptions that affected both the conduct of the war and expectations in Washington, Saigon, and Hanoi about its outcome. During 1962–65, for example, while the US involvement in the war was being debated, neither the commitment made by politicians nor the difficulties encountered in fulfilling the commitment were fully appreciated by the American people. Nor was it clear between 1965 and 1975, despite the confident rhetoric of US and North Vietnamese leaders, who would win the war (or why).

Nevertheless, there is much in each of these books that deserves attention today. All of the authors are well qualified to write on Vietnam, and each brings a different perspective to the topic. Next to retired foreign service officer Douglas Pike of the University of California, Berkeley, William S. Turley, of Southern Illinois University, is probably the foremost American academic scholar on Vietnamese communism. George Kahin is the doyen of Indochina studies at Cornell University and has published numerous books on the encounter between American foreign policy and societal and political change in Southeast Asia. Gabriel Kolko is based at York College in Canada and has published numerous insightful and important studies from a leftist—but not an uncritical—perspective. R. B. Smith is a master historian at the University of London, and his *International History of the Vietnam War* in two volumes is the best work to date on the Vietnam war and the international relationships that affected it. And Truong Nhu Tang, a Vietnamese communist leader for most of the war, writes as a direct participant in Viet Cong activities in South Vietnam.

TURLEY'S *The Second Indochina War* is a well-structured recapping of the major political and military developments that shaped the conflict between the United States and North Vietnam in the period from 1954 to 1975. The narrative is straightforward and well-suited to the general reader looking for a concise history of the war.

Drawing on archival research conducted in Vietnam as well as on interviews with North Vietnamese officials in 1983 and 1984, Turley succeeds in correcting some current misimpressions that have crept into the post-mortem literature about the war. Among the most important of these are the issue of whether the Viet Cong was a political and military force born of Hanoi or one acting independently (it was not independent, according to Turley, pp. 18–31) and the issue of the extent of US influence on the conflict between communist and noncommunist Vietnamese over who would control Indochina. Turley argues convincingly that despite the massiveness of the US involvement, it was the political and social forces arising from societal change and anticolonialism in Indochina that determined who lost and who won the war in Vietnam. Thus, implicit in Turley's view, the much-debated question of whether the United States could have won the war *militarily* is irrelevant, not because the answer is too difficult to arrive at but because it is the wrong question.

Turley's account of how the US strategy of counterinsurgency unwittingly protracted and widened the war rather than contained it is also enlightening. For example, according to the author, the US strategy required the communists to escalate the conflict to "limited war" as early as 1963 which, in turn, led to significant numbers of US ground combat troops being introduced by 1965 (pp. 54–59).

My only criticism of Turley's book (and the others reviewed here) is that it does not go far enough in drawing the lessons of Vietnam for today. What Turley does say in his last chapter—"Of Lessons and Their Price"—is modulated and reasonable. With respect to the American involvement in the war itself, Turley maintains that

> *. . . in Indochina the United States made commitments out of proportion to its interests. This was done in the belief that maintaining the credibility of commitments required defending them everywhere. But placing credibility at stake in a region that was not vital to U.S. interests undermined the conviction of the American people that the commitment had to be kept. Neither U.S. enemies, U.S. allies, nor its own people believed that the United States, for the sake of Indochina, would long sacrifice its effectiveness in other parts of the world. Thus, [the] appearance of unconditional commitment to the Saigon regime . . . actually undermined U.S. credibility.* (pp. 194–95)

Unfortunately, neither Turley nor the other authors discuss how the United States could have done things differently, especially since the commitment seemed reasonable at the time given widely-held and persistent fears that the domino theory was valid. Nor does Turley discuss how the United States could have limited or reversed its commitments once the premises on which they were based were proved flawed, particularly after so many US soldiers had died defending the interests these commitments once reflected.

With respect to the impact of US actions on political developments

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within South Vietnam, Turley concludes that "the United States . . . trapped itself by supporting political groups that lacked the confidence of their own people." This in turn raised doubts about the sincerity of the United States's claim of defending the Vietnamese people's right of self-determination and thus "invited cynicism about U.S. intentions." As time went on, the United States found it increasingly necessary "to involve itself deeply in stabilizing fragile governments and in nation-building, which cast [it] in a quasi-colonial role." This left the United States in a particularly vulnerable position, one which Turley describes quite tellingly:

Having adopted chronically weak clients to fight a long-established, well-organized, deeply entrenched adversary, the United States had to substitute its own resources and purpose for those of the regimes it purported to defend. These in turn were robbed of initiative and stigmatized by dependency. Under the circumstances, the United States could not intervene without perpetuating conditions that U.S. leaders believed required them to intervene in the first place. (p. 195)

Again, I would have liked Turley to elaborate on his analysis, in particular on how the United States could have legitimately succeeded in "nation-building." But to be fair, Turley makes no claim that his book will address or resolve these issues.

A HISTORY of much greater detail and scope is available in R. B. Smith's *An International History of the Vietnam War*. Two volumes are now in print, and they take the reader up to the US decision in February 1965 to escalate the war. (Volumes three and four will cover the next 10 years of the conflict.) Smith does a masterly job of relating world events to the beginnings of the conflict and the roots of the confrontation between the United States and North Vietnam. This has the important effect of keeping the United States's early involvement in Vietnam in proportion and perspective, by showing precisely how it was that the United States became embroiled in a war it did not seek, and why it was reasonable for decision-makers at the time to think that US actions would not lead to war.

For Smith, the very early 1960's was perhaps the most critical period of the war, especially the years 1960–61 when—by Smith's reckoning—the guerrilla movement should have been defeated in the countryside and political effectiveness established in Saigon. The opposition was in disarray, notes the author, and the 170,000-odd South Vietnamese troops, under the tutelage of their American military advisers, seemed firmly in control. But few US officials estimated correctly either the magnitude of the war inside South Vietnam or the tenacity of the Viet Cong and their adroitness at choosing when and where to fight.

Smith's analysis thus offers a fundamental insight that still has great relevance today. Guerrilla and limited wars always last longer than the strategists forecast. If such wars are not prosecuted and won decisively in their early stages, they may go on for years. What then matters most in protracted war situations is not military tactics or weapons but the political will to defeat the enemy. And as Smith makes very clear in volume two, such determination on the part of the United States was eroding as early as 1962.

Intervention, by George Kahin, is also a political and military history. It too is not short. It is about twice as long as Turley's book and covers events from 1945 to 1966. However, virtually all of Kahin's arguments and theses are familiar and, to many of us, quite predictable.

As a leading academic critic of the war, Dr. Kahin has consistently maintained that the United States's involvement in Indochina was an ill-conceived case of knee-jerk anti-communism. Like Turley, he makes it clear that even the massive application of US power did not translate into political leverage over successive governments in Saigon, nor was it a substitute for the political legitimacy and effectiveness necessary if there were to be a political alternative to communism in Vietnam. But unlike Turley, Kahin pleads his case by innuendo. Arguing that most decision-makers were cynical about the Vietnamese people and their struggle, he implies that US policies were morally and fatally flawed.

The problem with Kahin's book and approach is that it does a grave disservice to newcomers who are interested in gaining an understanding of why and how the United States became involved in the war. Instead of letting readers judge the validity and sincerity of US motives, Kahin makes it clear that, in his mind, the American government was part of "an unprecedented effort to shape and control a country's political character" (p. ix). This assertion predisposes the reader to think that US involvement was more sinister and premeditated than it was in reality. What the reader misses here is some sense of the idealism and ignorance from which US policy was formed and of the genuineness of the doubts many decision-makers had about whether they were doing the right things, for the right reasons, and in the right circumstances.

Moreover, I think the decision to have *Intervention* cover events only up to 1966 was a serious mistake that weakened the book for two reasons. First, the developments that Kahin describes from 1945 to 1966

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are inadequate to explain to today's readers either why the US government remained as involved as it did in a conflict that appeared unwinnable and deleterious to its other national and foreign policy interests or why the United States so steadfastly remained on the side of an ally who appeared so feckless and unsavory. Second, Kahin's critical assertion that US involvement assured that power in South Vietnam "remained in the hands of Vietnamese prepared to act in conformity with U.S. interests" (p. 432) can only be proved by looking at how the government of Nguyen Van Thieu behaved and managed its relationship with Washington in the post-1966 period. In fact, during the period from 1967 to 1975, the Thieu government acted as anything but a compliant client state.

OF ALL THE BOOKS reviewed here, Gabriel Kolko's *Anatomy of a War* is the most comprehensive and the most satisfying. It tells a complete and detailed story of the Vietnam war period. Kolko covers the political, diplomatic, and social origins of the conflict between communist and noncommunist forces in Vietnam, the foreign policy and security considerations that led to the US involvement, the strategy and tactics used by both sides, the key turning points that affected military and diplomatic efforts to end the war, and why those efforts failed.

Unlike the authors of the other books reviewed here, Kolko has a pro-communist bias, which he reveals clearly in the preface:

As someone on what one can amorphously call the Left, I have favored autonomous socialist, economic development in the Third World, including Vietnam, and I fully welcomed the Vietnamese Communist Party's success over the French and American alternatives. (p. xiv)

While holding no brief myself for this point of view, I like the way Kolko has handled it. He tells the story of what happened without letting his ideological preferences drive or obscure the analysis. And of all the books, Kolko's is the only one that tries to put the Vietnam experience into the context of the need to appreciate the enormous force and impact of societal change—whether externally driven or not—on political development. Thus, *Anatomy of a War* will be useful to today's students and new scholars seeking precedents for understanding limited wars and revolutionary struggles taking place now, as well as those that may occur in the future.

Kolko's book also effectively puts the Nixon/Kissinger foreign policy—as well as the relationship between the thinking of the two men—into perspective. Both are portrayed as calculating statesmen—not as amoral monsters—whose ideas about the proper purposes and objectives of American foreign policy were ultimately, but not predictably, undermined by the involvement in Vietnam.

HOW ALL THIS looked on the other side, and from the jungles and cities of Indochina, is the subject of Truong Nhu Tang's *Vietcong Memoir*. But Tang makes it clear that his book is not about events—especially military ones—likely to be recalled by readers today. His is the story, instead, of a "Vietcong urban organizer" who became the minister of justice in a cabinet set up by the South Vietnamese Communists' Provisional Revolutionary Government (PRG) in 1969, and who later became disillusioned.

It is not obvious at the outset of this autobiography why Tang, a privileged young man from an upper-class family background, would be drawn to the Communist movement in Vietnam. How this happened makes for extraordinarily interesting reading, and this is possibly the best nonfiction work available in English for students interested in understanding how communism, anti-colonialism, and nationalism became so closely—and perhaps uniquely—intertwined in the lives of some Vietnamese. Especially fascinating are Tang's accounts of his meetings with Ho Chi Minh and the appeals the communist leader used to create patriots and partisans; of his days as a student in Paris where he gradually awakened to the realization that racial bigotry, poverty, and oppression of one people by another "were not . . . the natural order of the universe" (p. 18); and of the role that youthful rebellion and parents' reactions to it played in forming Tang's character and turning him toward what proved to be a life-long commitment to political agitation against existing authority.

From the outset, the reader also knows where the author stands—he dedicates the book to "betrayed comrades"—and why he feels betrayed. In sharp contrast to most of the leaders of the Viet Cong who, like Mao Zedong, believed that a revolution is "not a dinner party" but an act of violence by which one class overthrows another, Tang believed in "humane" liberation. In retrospect, it appears that the Hue massacres[2] in 1968 were a turning point for Tang. Tang was, he recounts, "upset" by what happened and "not entirely satisfied" by the explanation of it he received "in private" from Huynh Tan Phat, the PRG president. These massacres led Tang to want to as-

[2]According to some accounts, thousands of Vietnamese civilians were killed as a result of communist terror after Hue had been captured by the Communists during the Tet offensive in late January 1968. The city was retaken on February 25, after heavy fighting and with high loss of life, by American and South Vietnamese forces. For a thorough discussion of this incident, see Don Oberdorfer, *TET!*, Garden City, NY, Doubleday, 1971.

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sure that revolutionary justice would be fair—and to wonder if the PRG and the authorities in Hanoi were committed to providing it. Tang was also deeply affected by the pervasive anti-Southern bias of "comrades" from the North which, he notes, was often a factor in the incarceration of many of his PRG colleagues. There is thus some insight into the origins of today's Vietnamese gulag where Tang's own brothers have disappeared.

IN A CERTAIN sense, then, the Vietnamese war has been a nightmarish tragedy for both the victors and the vanquished. But as these books help point out, knowledge of such wars does not automatically prepare foreign policy decision-makers to confront similar challenges in a better way. The sad truth is, given the various interventions in Central America, Southwest Asia, Africa, and the Middle East, that it is not at all clear that policy-makers or scholars in either the United States or the Soviet Union have gleaned any practical lessons about avoiding more Vietnams.

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Correspondence

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INTERPRETING HUNGARIAN EVENTS

TO THE EDITORS: I much appreciated Charles Gati's article "Imre Nagy and Moscow, 1953–56" published in the May-June 1986 issue of *Problems of Communism*. I completely agree with almost all the observations and conclusions of the author and consider the article factually very accurate. However, based on my own four years of research into the 1953–58 period in Hungary, I would like to offer alternative interpretations on two matters discussed by Gati.

Nagy's removal in 1955. I think that Imre Nagy's fall from power in early 1955 was, contrary to Gati's assertion, only loosely linked with the fall of Georgiy Malenkov from the Soviet premiership. The central problem that worried the Soviet leaders and that was ultimately at the root of Nagy's ouster was the Conference of the People's Patriotic Front which took place some months earlier in Budapest on October 24–25, 1954. This meeting is accurately described in Tibor Méray's book "Thirteen Days that Shook the Kremlin." As Miklós Vásárhelyi pointed out in a meeting I had with him in Budapest in 1985, the Soviets feared the atmosphere of "nationalistic enthusiasm" that permeated both the Conference and Nagy's introductory speech. They decided that it was too dangerous to have such an autonomous Magyar organization and leadership in a country situated between Austria and Yugoslavia just on the eve of a global settlement with the West in the case of the former (the Austrian Peace Treaty), and of Khrushchev's Canossa journey to Belgrade in the case of the latter. Both events did indeed occur shortly after Nagy's ouster.

Reservations about Hungary's withdrawal from the Warsaw Pact. Gati is not the only one to speak of such opposition. While in Budapest, I heard a rumor according to which Sándor Haraszti had expressed his reservations during the party meeting at which the withdrawal of Hungary from the Warsaw Pact was decided. I also note that, in his autobiographical interview with István Eörsi (the English title is *Record of a Life*), György Lukács wrote that he and Zoltán Szántó not only *spoke* against such a withdrawal, but actually *voted* against it.

However, in the course of my own research, I have found no corroboration of either the rumor or Lukács's claim. Since Lukács, Haraszti, and Szántó had all died, more or less recently, I wrote on this matter to Dr. George Heltai, the former Deputy Minister of Foreign Affairs in the Imre Nagy cabinet.

In a letter dated Charleston, SC, April 25, 1986, Dr. Heltai replied as follows (excerpts): "I respect Lukács, but I am afraid he always remembered what he wanted to do or say and not what he did say. In the case of the statement abrogating the Warsaw Pact Treaty, neither he nor Szántó raised objections as to its content; their objections were just some remarks about the form of our announcement ('Why do you make it so formal? Can't you talk to Andropov again?' etc.) [So they] did not vote against because votes were not taken. . . . [As for] Haraszti, I never heard any kind of reservation from him; on the contrary, I kept a picture in my mind: Haraszti gesticulating and enthusiastically supporting both proposals [i.e., the declaration of neutrality and the appeal to the United Nations to guarantee that status]."

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MR. GATI RESPONDS: I welcome Mr. Argentieri's comments. If the two of us—a prominent Italian scholar associated with the Italian Communist Party and an American scholar priding himself on his "bourgeois-objective" approach to politics—disagree only about such minor issues, then we have indeed come a long way.

1. Concerning Imre Nagy's removal in 1955, we agree on the important point: that the decision was made in and by Moscow. Describing that crucial meeting in the Kremlin on January 7, 1955, I pointed out that the charges against Nagy were made on the basis of his "recent speeches and articles." It may well be that the speech that had particularly angered

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the Soviet leadership was Nagy's opening speech to the October 24–25, 1954, Congress of the People's Patriotic Front. On that occasion, Nagy had appealed to *all* Hungarians to help him implement his June 1953 program. Hence, presumably, the charge of "underestimating the party's governing role" and even of "chauvinism."

Was Nagy's subsequent ouster the consequence of this speech and "only loosely linked with the fall" of Malenkov? My view is that it was "hardly accidental," as *Pravda* might have put it, that Malenkov's demotion took place in February and Nagy's at the very beginning of March 1955. More important, a secret Soviet memorandum on the whole affair, sent to several East European parties and cited in my article, implicitly confirmed the link between Malenkov and Nagy. Permit me to quote its key sentence again: "The policy of Malenkov, aside from the harm which it threatened in Soviet domestic matters, concealed serious dangers for the countries of the people's democracies and for the relations of the Soviet Union with these countries, an example of which is the situation in Hungary."

2. Concerning the November 1, 1956, decision of the party's executive committee to withdraw Hungary from the Warsaw Pact, I specifically referred to "reservations" about and not "opposition" to that decision by three of the participants. I added that "the motion easily carried."

As Mr. Argentieri also believes that György Lukács and Zoltán Szántó expressed such reservations, the only issue between us is whether Sándor Haraszti, an ex officio member of the committee as editor of the party daily, did or did not join them. In saying that he did, I relied on the testimony of one of Nagy's closest associates—and one of Mr. Argentieri's two sources—Mr. Miklós Vásárhelyi. In saying that he did not, Mr. Argentieri relies on Professor George Heltai's testimony. Given my complete trust in and tremendous respect for both Messrs. Vásárhelyi and Heltai, which I know Mr. Argentieri shares, we cannot know for sure what Haraszti said at that meeting.

From today's perspective at least, far more telling is the fact that János Kádár did not express any reservations about Hungary's withdrawal from the Warsaw Pact.

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POLISH LIBERALISM

TO THE EDITORS: On page 48 of Roman Laba's article "Worker Roots of Solidarity" (*Problems of Communism*, July-August 1986), footnote 4 regarding the Polish journal *Respublica* deserves some comment. The author states that *Respublica* "was the most conscious representative of that political trend in Polish intellectual life in the early 1980's which advocated returning to liberal (i.e., Manchester Liberal) 19th-century tenets combined with a belief in elites and the need for their existence and a pessimism concerning the democratic potential of mass societies."

I wish to correct the impression that there have been no other significant representatives of liberal views in Poland in the early 1980's. Specifically, since 1978 "Officyna Liberałow" has been publishing books and brochures advocating the position of the Conservative-Libertarian Movement in favor of a free market. Some of these books were displayed at the 1986 Mt. Pellerin Society's Annual Conference in Italy. We not only advocate, we practice free market solutions. Where many Polish underground publishers print in 200 copies and give them away to foreign correspondents, we sell everything. As editor-in-chief, I am the only person entitled to give something away, and I do so only on very rare occasions. We print in sizable runs—e.g., 17,500 copies of George Orwell's *1984* in Polish. More normally, we print in runs of 3,500–5,000 copies. We normally sell our publications through our own network, and only a small part is sold through Solidarity channels. In addition to "Officyna Liberałow," there are some 15 other neo-liberal underground publishers in Poland.

Respublica has negotiated with the government to obtain legal status. There is nothing wrong in this initiative—the Conservative-Libertarian Movement hopes to do the same. Why the author choses not to identify *Respublica*'s editor, who is widely known in Poland, escapes me, since the name was mentioned by the government spokesman, Jerzy Urban, in a widely circulated account of the negotiations.

I highly appreciate *Respublica*, although only the articles in it by Stepan Kisielewski have been unmistakably in favor of a free market for Poland. But *Respublica* helped break the monopoly of the Left in underground publishing. Moreover, the journal is an extremely valuable ally, enjoying as it does some support from the Catholic Church, which our movement lacks. But when it comes to grass-roots influence, our movement outnumbers the *Respublica* group by as much as 50 or 100 to 1.

Respublica has now entered a new stage. Its position is very delicate, as it is going to be edited under Church auspices. It must also defend itself against Left accusations of being "collaborationist." We shall defend *Respublica* with our means and influence. Please, do not disturb!

The political situation in Poland is very complicated now, running beyond the bounds of the Polish United Workers' Party/Solidarity divide. Indeed, both of these "parties" are amorphous bodies. Both contain diverse factions: socialists, trotskyists, anarchists, communists (yes, in Solidarity, too), social democrats, nationalists, conservatives, liberals, christian-democrats (yes, in the PUWP too). Given this diversity, neither the communists nor Solidarity can have a very specific political program. Both mouth big words like "democracy" and "socialist democracy," or "people's power," which have no concrete meaning. In this context, Solidarity is in a better position: its program has not disappointed the population.

We fear that Solidarity leaders may feel obliged to "do something." They clearly cannot enter the political arena, for lack of a political program. Indeed, to enunciate a political program would dis-

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rupt the unity of Solidarity's diverse adherents—and "unity" is a sacred word among the Left, which predominates among Solidarity's leaders. Their only alternative is to organize meetings and demonstrations, with another dose of rhetoric, readily listened to by their supporters. As these words are more convincing than the rhetoric of the government, the latter will once again have them arrested. This is a vicious circle.

We prefer a slow evolution, in which we are sure winners. Time works for us as we propagate our views and win supporters. Revolutions in the streets are not important; it is the revolution in people's minds that counts. Thus we publish—both in the official and in the underground press—with good results.

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Conservative-
Libertarian Movement
Editor-in-Chief
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JAPANESE CP

TO THE EDITORS: Following publication of my article on the Japanese Communist Party (JCP) in the July-August 1986 issue of *Problems of Communism*, some new information came to light regarding the JCP's recent relations with the Soviet and Chinese parties.

Relations with the Soviet party. It seems that JCP Presidium Chairman Tetsuzo Fuwa's visit to the Soviet Union in August 1986 was somewhat of a disaster for the Japanese party. Upon arrival in Moscow on August 4, the Japanese delegation was told that the meeting had to be postponed for a few days and that in the meantime the Soviet hosts had arranged a Leningrad sightseeing trip. Upon their return to Moscow, the Japanese were told that General Secretary Mikhail Gorbachëv was indisposed and that they would have to meet instead with Yegor Ligachëv.

Prior to his departure for Moscow, Fuwa had mentioned to assembled journalists his intention to bring up at the JCP-CPSU summit the vexing territorial problem (which the Soviets claim does not exist). Obviously, the Soviets decided to punish the JCP for not sticking to the rather restrictive agenda of antinuclear matters agreed upon at the Chernenko-Miyamoto meeting of late 1984.

When the meeting finally took place, a week later (on August 11), inexplicably Gorbachëv appeared, showing no signs of any recent illness. But he looked disinterested in the proceedings and left almost all the talking to Ligachëv and others. No joint statement was issued at the end of the talks. Party boss Kenji Miyamoto was reported furious at Fuwa's amateur diplomatic efforts (see Mizushima Tsuyoshi, "Chairman Fuwa Was Deceived: Gorbachëv's Cold Was a Feigned Illness," *Zembo* [Tokyo], No. 10, October 1986, pp. 18–19).

Relations with the Chinese party. On November 14, 1986, at a press conference in the National Diet building, Fuwa made public a document entitled "The Process of Bilateral Talks Between Japanese and Chinese Communist Parties" (See a summary in *Japan Press Weekly* [Tokyo], No. 1522, Nov. 15, 1986, pp. S/1–6). It is clear from this document that the JCP-CCP talks have reached an impasse.

The Japanese party gave the following details of recent negotiations betwen the two parties and its reasons for the breakdown of the talks. It appears that the Chinese party initiated the exchange in March 1985, and since that time several communications have been exchanged as well as a week of talks in late September 1985. The stumbling block (as discussed in my article) proved to be the unwillingness of the CCP to give up its contacts with pro-Chinese Japanese leftists (mostly former JCP members who were purged from the party), or as the JCP calls them, "anti-party groups and elements used by the CCP leadership at that time as the tools for hegemonist interference, which aimed even at overthrowing the JCP leadership."

The second problem was that although the CCP (1)"expressed pain and regret over the defects and errors committed [during the Cultural Revolution] and the extremely abnormal methods used in dealing with a number of communist parties, including the Japanese Communist Party," (2) used the term "self-criticism," and (3)offered an apology for violence used against two JCP representatives at the Beijing Airport in 1967, the Chinese stopped short of admitting intervention in the affairs of the Japanese party.

The final exchange took place in the form of a brief CCP Central Committee letter dated September 10, 1986, that expressed a "sincere hope to restore relations" but added "that it would be very difficult at present to achieve positive results from meetings between our two parties," and a JCP CC letter of October 24, 1986, which directly led to Fuwa's announcement in mid-November.

Thus, for the moment, it seems that the Chinese party is focusing more on cultivating easier relations with social-democratic and Third World parties, while the Japanese party is sticking to its principles.

There is also a publication that should be added to the table of JCP publications appearing on page 10 of my article: *Sokoku to Gakumon no tame ni* (For the Fatherland and Scholarship)—weekly organ of the All-Japan Federation of Student Self-Governing Bodies (JCP-faction), 18,000 copies. This is referenced on p. 233 of Nihon Seiji Keizai Kenkyujo (Japan Institute for Political and Economic Affairs), *Sayoku Benran—Kenkyu, Chosa, Taisaku no Tebiki* (The Left-Wing Handbook: Research, Surveys, and Policy), Tokyo, August 1986.

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CORRECTIONS

The photo of the Interfactory Strike Committee meeting at the Lenin Shipyard of Gdansk in August 1980 that appeared on p. 64 of the July-August 1986 issue of *Problems of Communism* should have been credited to Jean Gaumy/MAGNUM.

* * *

In Charles Gati's article "Imre Nagy and Moscow, 1953–56" (*Problems of Communism*, May-June 1986) there was an error at the top of column 2 on page 39. The sentence beginning after footnote reference 25 should read: "They knew that the party would soon call on Nagy, and perhaps on his associates too, to rejoin the regime and thereby help reestablish a measure of stability in the country."

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